

Intermountain Power Project

**Unit #1
B&W Contract No. RB-614**

**Unit Performance Test
Data Analysis**

**Prepared For:
Intermountain Power Project**

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IP7_038466

INTERMOUNTAIN POWER PROJECT
UNIT #1 - RB-614

PERFORMANCE TESTS - AUGUST 1990

OVERVIEW

Boiler performance tests were performed on Intermountain Power Project's Unit #1 from 22 August 1990 until 28 August 1990. The purpose of the tests was twofold. Intermountain Power wished to see: 1) the effects of one year of operation on the performance of the airheaters and 2) the effects on unit performance with various amounts of cooling air to idle burner compartments. Testing was performed at various loads from the Reheat Control load of 2892.4 Klb/hr main steam flow to the turbine valves wide open and rated turbine throttle pressure load of 6346.1 Klb/hr main steam flow.

All of the tests were conducted using composite gas sampling grids and electronic O₂ analyzers. Air and gas temperatures around the airheaters were measured using thermocouple grids. Airheater air and gas side pressure drops were measured using manometers. Plant instrumentation was used for main steam temperature, reheat steam temperature, and reheat spray flow. Superheater spray flow quantities were calculated by heat balance around the first and second stage attemperators using plant instrumentation.

SUMMARY

This set of tests substantially confirm that the unit efficiency and performance has not changed since the November 1989 tests. The unit efficiency has essentially remained the same since the November 1989 tests (89.38 % versus 89.29 %).

The secondary airheater leakage rate has increased 44 Klb/hr from the November 1989 tests. This was accompanied by an increase in air inlet to gas outlet pressure drop of 0.3 in. w.c. These two changes would appear to be the result of a malfunction of the automatic seal adjusters on the East secondary airheater during test 7 through 11.

There was a minimum of impact on unit efficiency or performance that could be attributed to the cooling air flow rates required to maintain out of service burner register parts at 1100 °F.

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TEST PLAN

Test Descriptions

A total of eleven tests were conducted during the period from 22 August 1990 to 28 August 1990. Eight of the tests were at the turbine valves wide open condition with various combinations of burners out of service and various levels of cooling air flow to the out of service burners. The following tabulation outlines all of the different combinations that were used for this set of tests:

<u>Test ID</u>	<u>Date</u>	<u>Test Conditions</u>
1	8/22/90	Turbine control valves were wide open, and main steam was at 996 °F and 2404 PSIG. E pulverizer was out of service and cooling air to the compartment was regulated to hold a burner backplate temperature of 1200 °F.
2	8/22/90	Turbine control valves were wide open, and main steam was at 998 °F and 2400 PSIG. E pulverizer was out of service and cooling air to the compartment was regulated to hold a burner backplate temperature of 1150 °F. <i>NOTE: This set of test data is suspect due to problems with the O2 analyzers during the test period.</i>
3	8/22/90	Turbine control valves were at the third valve point, and main steam was at 1005 °F and 2402 PSIG. F and H pulverizers were out of service and cooling air to the compartments was set at the normal flow rate.
2R	8/23/90	Turbine control valves were wide open, and main steam was at 1004 °F and 2399 PSIG. E pulverizer was out of service and cooling air to the compartment was regulated to hold a burner backplate temperature of 1150 °F. <i>NOTE: This set of test data is a repeat of Test 2.</i>
5	8/24/90	Turbine control valves were wide open, and main steam was at 1004 °F and 1818 PSIG. This was the lowest load that reheat steam temperature could be maintained. E, F, G, and H pulverizers were out of service and cooling air was regulated at the normal flow rate.
6	8/24/90	Turbine control valves were at the second valve point, and main steam was at 1006 °F and 2401 PSIG. E, G, and H pulverizers were out of service and cooling air to the compartments was set at the

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normal flow rate.

- 7 8/27/90 Turbine control valves were wide open, and main steam was at 1005 °F and 2406 PSIG. F pulverizer was out of service and cooling air to the compartment was regulated to hold a burner backplate temperature of 1350 °F. Note: Began experiencing mechanical problems with the SAH seal adjusters.
- 8 8/27/90 Turbine control valves were wide open, and main steam was at 1007 °F and 2404 PSIG. F pulverizer was out of service and cooling air to the compartment was regulated to hold a burner backplate temperature of 1150 °F . Note: Still experiencing mechanical problems with the SAH seal adjusters.
- 9 8/28/90 Turbine control valves were wide open, and main steam was at 1006 °F and 2395 PSIG. A pulverizer was out of service and cooling air to the compartment was regulated to hold a burner backplate temperature of 1150 °F. Note: Still experiencing mechanical problems with the SAH seal adjusters.
- 10 8/28/90 Turbine control valves were wide open, and main steam was at 1004 °F and 2394 PSIG. All pulverizers were in service. Note: Still experiencing mechanical problems with the SAH seal adjusters.
- 11 8/28/90 Turbine control valves were wide open, and main steam was at 1004 °F and 2393 PSIG. A pulverizer was out of service and cooling air to the compartment was regulated to hold a burner backplate temperature of 1350 °F. Note: Still experiencing mechanical problems with the SAH seal adjusters.

Figures 1 and 2, at the end of this report, outline a sideview of Unit #1 and the locations of the various burner elevations.

Instrumentation and Test Procedure

The test procedure used was in accordance with ASME PTC-4.1 Steam Generators, Heat Loss Method, Abbreviated Form. All flue gas analysis was conducted with multiple point, composite sampling grids and electronic analyzers for the measurement of the oxygen content of the gas. Due to the configuration of the air heater gas outlet flues, it was

not possible to measure the gas leaving the secondary air heaters directly. Sampling grids were installed at the bag house inlets to obtain a total leakage for all air heaters, and at the primary air heater gas inlets and outlets to measure primary air heater leakage. The secondary air heaters were calculated by difference as explained in the section on Data Reduction and Calculation Methodology.

Appendix 4 contains a drawing of each gas sampling grid installed for these tests. The number of sampling points in each gas grid are as follows:

Economizer gas outlet East side	- 28 (7 wide - 4 deep)
Economizer gas outlet West side	- 28 (7 wide - 4 deep)
Primary air heater gas inlet East	- 18 (6 wide - 3 deep)
Primary air heater gas inlet West	- 18 (6 wide - 3 deep)
Primary air heater gas outlet East	- 9 (3 wide - 3 deep)
Primary air heater gas outlet West	- 9 (3 wide - 3 deep)
Bag house inlet East	- 48 (12 wide - 4 deep)
Bag house inlet West	- 48 (12 wide - 4 deep)

In addition to the flue gas sampling grids, the following temperature grids were installed on the air side of the air heaters:

Primary air heater air in East	- 8 (4 wide - 2 deep)
Primary air heater air in West	- 8 (4 wide - 2 deep)
Secondary air heater air in East	- 8 (4 wide - 2 deep)
Secondary air heater air in West	- 8 (4 wide - 2 deep)
Primary air heater air out East	- 15 (5 wide - 3 deep)
Primary air heater air out West	- 15 (5 wide - 3 deep)

Plant instrumentation was used to measure the air temperature leaving the secondary air heaters.

Water manometers were installed to measure pressure differentials at the following locations:

Air in to gas out differential	- Primary air heaters
Air in to gas out differential	- Secondary air heaters
Air side differential	- Primary air heaters
Air side differential	- Secondary air heaters
Gas side differential	- Primary air heaters
Gas side differential	- Secondary air heaters

Coal and ash samples were obtained during the tests. Samples were collected from two different mills every half hour during the test periods. Ash and fuel analysis were performed by Intermountain Power Service Corporation's Fuels Laboratory. A copy of the report detailing the fuel and carbon loss analysis is attached as Appendix 5.

All other data necessary to determine unit output and efficiency was collected from the plant computer. Data was obtained at five (5) minute

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intervals and later downloaded to an HP-9816 computer for averaging and reporting.

DATA REDUCTION AND CALCULATION METHODOLOGY

Unit efficiency was calculated in accordance with ASME PTC-4.1 *Steam Generators, Heat Loss Method, Abbreviated Form*. Excess air was determined from measured O₂ and the test fuel analysis in accordance with ASME PTC-19.10 *Flue And Exhaust Gas Analysis*. The key measurement points for determining efficiency by the heat loss method are average air temperature entering the unit and average gas temperature and excess air leaving the unit. The average air temperature entering the unit is a weighted average of the air temperature entering the primary and secondary air heaters. The method for determining the primary/secondary air splits is described below. The average gas temperature and excess air leaving the unit is a composite sample of the gas entering the bag house, which is a mix of the gas leaving the primary and secondary air heaters. This is an ideal arrangement for measuring unit efficiency. Flue gas sampling at the economizer outlet along with the bag house inlet enables calculation of total air heater leakage with a high confidence level.

In order to evaluate individual air heater performance and leakage, it is desirable to measure the conditions at the gas and air inlets and outlets of each air heater. Due to the duct arrangement of this unit, it was not possible to measure the excess O₂ or gas temperature leaving the secondary air heaters directly. Therefore, it was necessary to calculate the secondary air heater gas outlet conditions based on the primary air heater gas outlet and bag house gas inlet conditions. The method used to calculate air and gas splits to the primary and secondary air heaters, and to determine the secondary air heater gas outlet conditions is as follows.

First fuel input was calculated based on the measured unit output and the unit efficiency determined as described above. Then the total gas mass flow leaving the economizer and entering the bag house was calculated stoichiometrically based on the flue gas analysis and the fuel input.

Gas mass flow through the primary air heater was calculated by heat balance using measured primary air mass flow to the mills, primary airheater air inlet temperature, average mill air inlet temperature, and primary airheater gas inlet and outlet temperatures. The gas mass flow entering the secondary air heaters was then calculated as the difference between the total gas mass flow leaving the economizer and the gas mass flow entering the primary air heaters.

The secondary air heater leakage was calculated by the difference between total air heater leakage as calculated above and primary air heater leakage as calculated from the primary air heater gas inlet and outlet

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data and gas mass flow entering the primary air heater from above. Knowing the secondary air heater leakage, gas temperature leaving the primary air heater, average gas temperature leaving all air heaters, and the gas mass flows, it is possible to calculate the average gas temperature leaving the secondary air heaters. A detailed description of this calculation procedure and calculations are contained in Appendix 7.

From the efficiency calculations, fuel analysis, and unit output calculations, the total air flow was calculated stoichiometrically. Secondary air flow is the difference between total air flow and measured primary air flow entering the mills. The primary/secondary air flow split is needed to determine the average air temperature entering the unit. Since a change in primary/secondary air flow split affects the average air temperature entering the airheater, the unit efficiency calculation must be reiterated until the assumed primary/secondary air flow split agrees with the calculated primary/secondary air flow split.

TEST RESULTS

A listing of all of the data obtained for these tests is contained in Appendix 1. The following is a discussion of the test results as they relate to changes in unit performance from the tests conducted in March of 1988 and November 1989.

Unit Efficiency

Table I shows the efficiency for all of the tests corrected to contract conditions. The average results from the Acceptance tests and the November 1989 tests are also included for reference.

The average efficiency for all of the tests conducted at the turbine valves wide open condition was 89.56 percent. Appendix 2 contains a summary of the unit efficiency calculations for all tests conducted. A summary of the total unit output calculations is contained in Appendix 3.

A summary of the unit efficiency calculations using the flue gas analysis from the economizer gas outlet grids and the baghouse gas inlet grids is included as Appendix 7. The efficiency results using the calculated secondary airheater and primary airheater leakages should be within +/- .02 % of the efficiency results using measured composite leakages.

Test No.	Efficiency Actual	Efficiency Corrected	Output MKB	Percentage of Rated Output
AVE OF GUARANTEE TESTS	87.99	88.43	6533.2	97.6
AVE OF November 1989 TESTS	89.51	89.29	6918.5	103.4
AVE OF August 1990 FULL LOAD TESTS	89.56	89.38	7045.5	105.3
1	89.37	89.17	7096.2	106.0
2	89.27	89.41	7025.0	104.0
3	89.29	89.51	6273.6	93.8
2R	89.30	89.51	7094.7	106.0
5	89.55	90.23	3550.1	53.1
6	89.63	89.88	4600.4	68.7
7	90.52	89.82	7049.6	105.4
8	89.50	89.35	7089.6	105.9
9	89.59	89.40	7022.7	104.9
10	89.26	89.18	7019.3	104.8
11	89.19	89.22	6946.6	103.8

TABLE I - EFFICIENCY SUMMARYPrimary and Secondary Air Heater Performance

Table II contains a summary of the calculated air heater leakages. The calculated air heater leakage for the secondary air heaters is greater than it was for the November 1989 tests, while the primary air heater leakage is slightly lower than what it was for the November 1989 tests. The change in the primary airheater is due to the higher total pressure drop from the air inlet to the gas outlet and the higher air inlet temperature. The change in the secondary airheater can be attributed to the reported problems with the automatic seal adjusters during the last five tests.

Appendix 8 contains copies of the calculated individual airheater performances for all eleven tests. These tables are based on the average test data for each test. The columns labeled as "W BH" and "E BH" contain the composite data and values for the east and west sides of the unit, while the other four columns represent data and values for the individual airheaters. The calculation procedure for the individual airheaters is the same as that which is detailed in Appendix 7. The total gas flow and total air flow are calculated stoichiometrically from the unit efficiency, unit output and fuel analysis. The composite leakage for each side was calculated based on the excess O₂ leaving the

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economizer and entering the baghouse for that side. Individual primary airheater leakages were calculated based on the individual excess O2 data entering and leaving the primary airheaters. An assumption was made, that each primary air heater has half of the primary air flow passing over it. The gas flow to each primary airheater is then calculated by heat balance. When calculating the individual secondary airheater leakages, it is assumed that the half of the difference between the total gas flow leaving the economizer and the total gas flow entering the primary airheaters.

Test No.	Primary Leakage Klb/hr	Primary Air-Gas ΔP in. w.c.	Secondary Leakage Klb/hr	Secondary Air-Gas ΔP in. w.c.	Total Leakage Klb/hr
AVE OF GUARANTEE TESTS	231	44.8	312	10.3	541
AVE OF November 1989 TESTS	218	45.3	171	11.9	389
AVE OF August 1990 Full Load TESTS	201	47.7	215	12.2	416
1	201	47.2	177	12.7	377
2	184	47.8	39	12.9	227
3	201	46.1	279	10.9	481
2R	210	47.8	188	12.8	399
5	171	44.0	247	7.5	418
6	181	45.7	266	8.8	445
7	233	47.3	366	12.0	599
8	183	47.5	231	11.8	415
9	205	47.4	205	12.0	407
10	195	48.1	180	12.0	373
11	186	48.5	157	12.0	342

TABLE II - SUMMARY OF AIR HEATER LEAKAGE INFORMATION

It should be noted that for test 2 the calculated air heater leakage for the west secondary airheater is -1.9 KLB/HR. Since it is not possible to have negative airheater leakage on this type of unit, it is most likely that some of the data for test #2 was in error, and was therefore not considered in drawing any conclusions about the overall performance of this unit.

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Expected Air Heater Exit Temperature

The design target value for temperature entering the bag house was 280 degrees F (uncorrected for leakage). Table III contains a summary of the measured inlet temperatures, temperatures corrected to design air heater air entering temperature, and temperatures corrected for air heater leakage and air entering temperatures.

Test No.	Measured Temperature	Corrected For AH Ent. Temp.	Corrected For Ent. Temp & Excluding Leakage
AVE OF GUARANTEE TESTS	286.6	285.3	299.4
AVE OF November 1989 TESTS	283.0	275.4	286.2
AVE OF August 1990 Full Load Tests	289.2	272.2	282.9
1	294.5	281.8	291.6
2	293.2	275.7	281.4
3	269.6	264.6	277.1
2R	283.0	267.9	277.4
5	247.6	235.7	249.3
6	258.5	249.8	263.1
7	264.8	249.6	264.2
8	292.9	273.3	284.5
9	283.9	271.1	281.3
10	301.9	281.4	291.5
11	303.1	280.3	289.5

TABLE III - AIR HEATER EXIT TEMPERATURE SUMMARY

Effects of Cooling Air to Out of Service Compartments

There are two different effects that changing the amount of cooling air to out of service burners can have on unit performance. One effect is the change in efficiency due to the change in excess air and the change in CO formation. The change in CO formation should be negligible. The second major effect could be on steam temperatures and the accompanying changes in the required spray flow rates. Due to the ability to control the proportions of the gas flow over the reheat and primary superheater there should be little effect from the change in cooling air flow rate.

Table IV lists the results of varying the amount of cooling air to burner compartments that are out of service on unit efficiency and CO formation.

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In order to make a better analysis, results from previous tests are also included. Each grouping of tests listed are all comparable in that the unit load, and mill out of service are the same. The first group of tests were all conducted at full load with 'E' mill out of service, the second group of tests were conducted at full load with 'A' mill out of service and the third group of tests was conducted at full load with 'F' mill out of service.

The table consists of columns that represent the amount of cooling air flow, test efficiency corrected to contract conditions, excess air measured at the economizer outlet, CO measured at the economizer outlet, and the heat loss due to CO formation. The heat loss due to CO formation was determined from *ASME PTC-4.1 Steam Generators*, equation 7.3.2.07. It should be recognized that this is one of the heat losses that constitute the unaccounted losses when an abbreviated efficiency test is conducted.

In each case where there is a measurable difference in the efficiencies between tests at similar operating configurations, the difference is due to a difference in the heat in the dry gas loss. The heat in the dry gas loss difference was the result of differences in the gas temperature entering the airheaters.

Test No.	Cooling Air Flow Rate	Efficiency Corrected to Contract, %	Excess Air Measured @ Econ, %	CO Measured @ Econ, PPM	Efficiency Loss Due to CO Formation, %
5A ¹	---	88.87	20.0	48.4	.019
1	Low	89.17	21.7	19.8	.007
2R	High	89.51	21.9	18.5	.007
6A ¹	---	88.93	17.5	48.7	.018
2N ²	---	89.28	17.5	30.6	.011
11	Low	89.22	17.6	214.8 / 31.9	.079 / .012
9	High	89.40	21.0	59.3	.022
10A ¹	---	88.98	17.5	51.4	.019
7	Low	89.82	17.6	145.2 / 85.5	.056 / .033
8	High	89.35	17.7	799.0 / 33.1	.285 / .012

1 Denotes a test from the Acceptance Test Report conducted at a similar set of unit conditions.

2 Denotes a test from the November 1989 Test Report conducted at a similar set of unit conditions.

TABLE IV - EXPECTED EFFICIENCY CHANGE DUE TO COOLING AIR

During tests 7, 8, and 11 there was a marked difference in measured CO between the left and right sides of the unit. CO was consistently higher on the east side of the unit and considerably above the values that had

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been seen on other tests. Since an explanation has not been determined, the heat loss due to CO formation was calculated using each of the available CO readings for loads 7, 8, and 11.

The effects of cooling air flow rates on steam temperatures and spray flow rates were also examined. Table V contains a summary of steam temperatures and spray flow rates. Steam temperatures remained at the design values and there were no significant changes in the required spray flow rates.

Test No.	Superheat Steam Temp. °F	Reheat SH Steam Temp. °F	SH Attemp. Spray Flow Klb/hr	RH Attemp. Spray Flow Klb/hr
AVE OF GUARANTEE TESTS	1003.2	1002.2	26.2	4.4
AVE OF November 1989 Tests	1004.9	1003.7	96.5	54.2
AVE OF August 1990 Full Load Tests	1004.5	1006.3	66.6	5.2
1	996.2	999.8	35.3	0.8
2	998.2	1000.1	21.9	1.9
3	1005.9	1004.9	157.7	0.5
2R	1004.0	1010.6	65.3	3.9
5	1005.1	994.9	185.4	1.3
6	1006.3	1001.9	103.0	2.4
7	1005.7	1004.6	123.3	7.6
8	1007.5	1007.8	101.7	9.9
9	1006.7	1006.9	36.7	4.1
10	1004.9	1007.9	88.4	4.4
11	1003.5	1006.4	15.3	5.5

TABLE V - EFFECTS OF COOLING AIR ON REHEATER STEAM TEMPERATURE

CONCLUSIONS

Unit efficiency was 89.38 % when corrected to contract conditions which is an improvement of 0.09 % from the November 1989 tests and 0.95 % from the Guarantee tests. The unit efficiency has essentially remained the same since the November 1989 tests.

Secondary airheater leakage rate has increased 44 Klb/hr from the

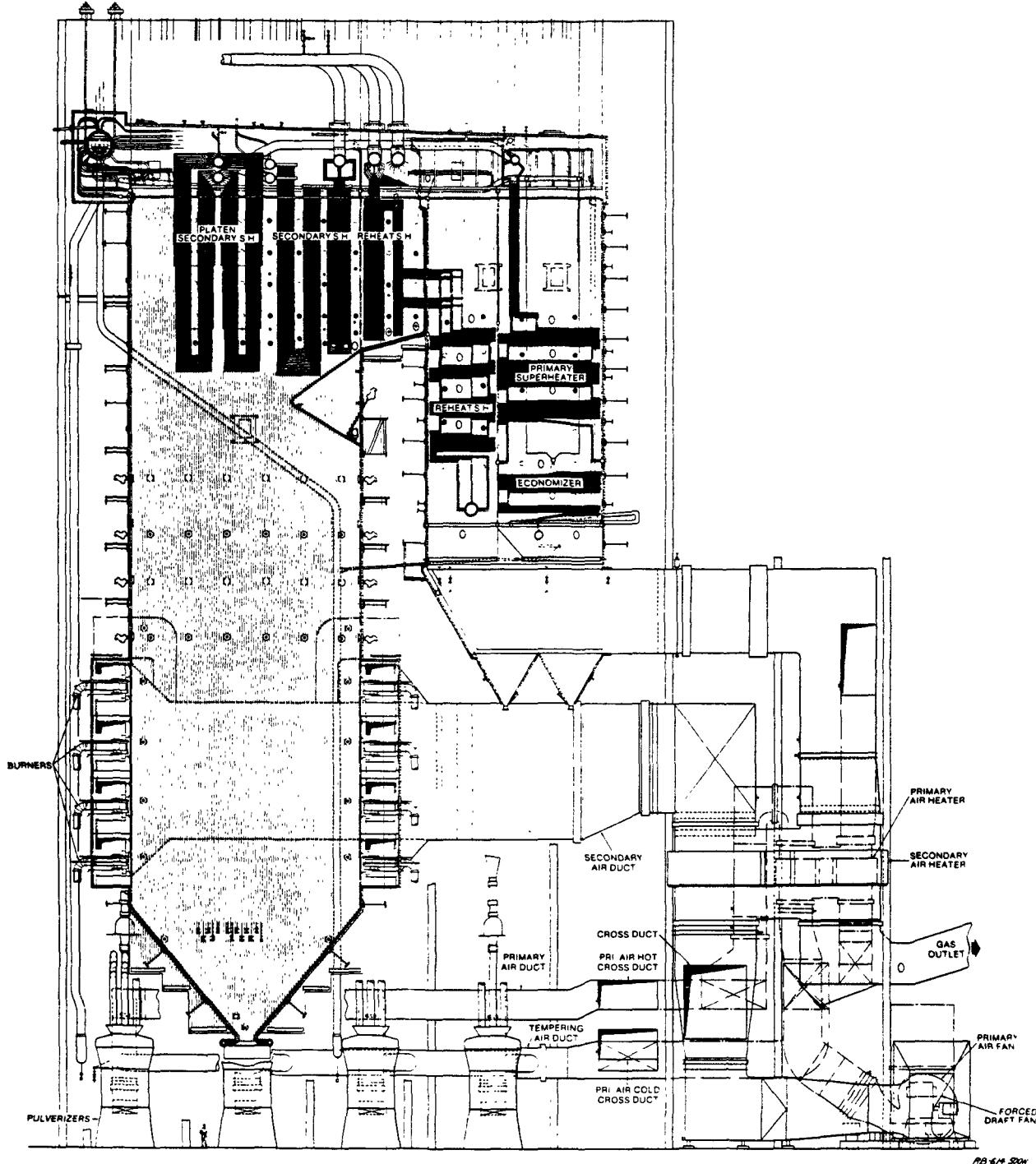
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November 1989 tests. This was accompanied by an increase in air inlet to gas outlet pressure drop of 0.3 in. w.c. The substantial east to west bias in secondary air heater leakage that was noted on tests 7 through 11 was determined to be the result of problems with the automatic seal adjusters. The secondary airheater leakage rates for tests 1 and 2R were 177 Klb/hr and 188 Klb/hr, which is essentially the same as the November 1989 tests.

There was a minimum of impact on unit efficiency or performance that could be attributed to the cooling air flow rates required to maintain burner register parts at 1100 °F.

This set of tests substantially confirm the conclusions drawn as a result of the November 1989 performance tests.

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**INTERMOUNTAIN POWER PROJECT
UNIT NO. 1
LYNNDDYL, UTAH**

CAPACITY LB STEAM PER HOUR SUPERHEATER OUTLET TEMPERATURE F
SUPERHEATER OUTLET PRESS PSI 2975 1005

BLACK & VEATCH ENGINEERS

BABCOCK & WILCOX RADIANT REHEAT BOILER

FIGURE I

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Intermountain Power Project

Burner Elevation Map

Pulverizer

FW RW

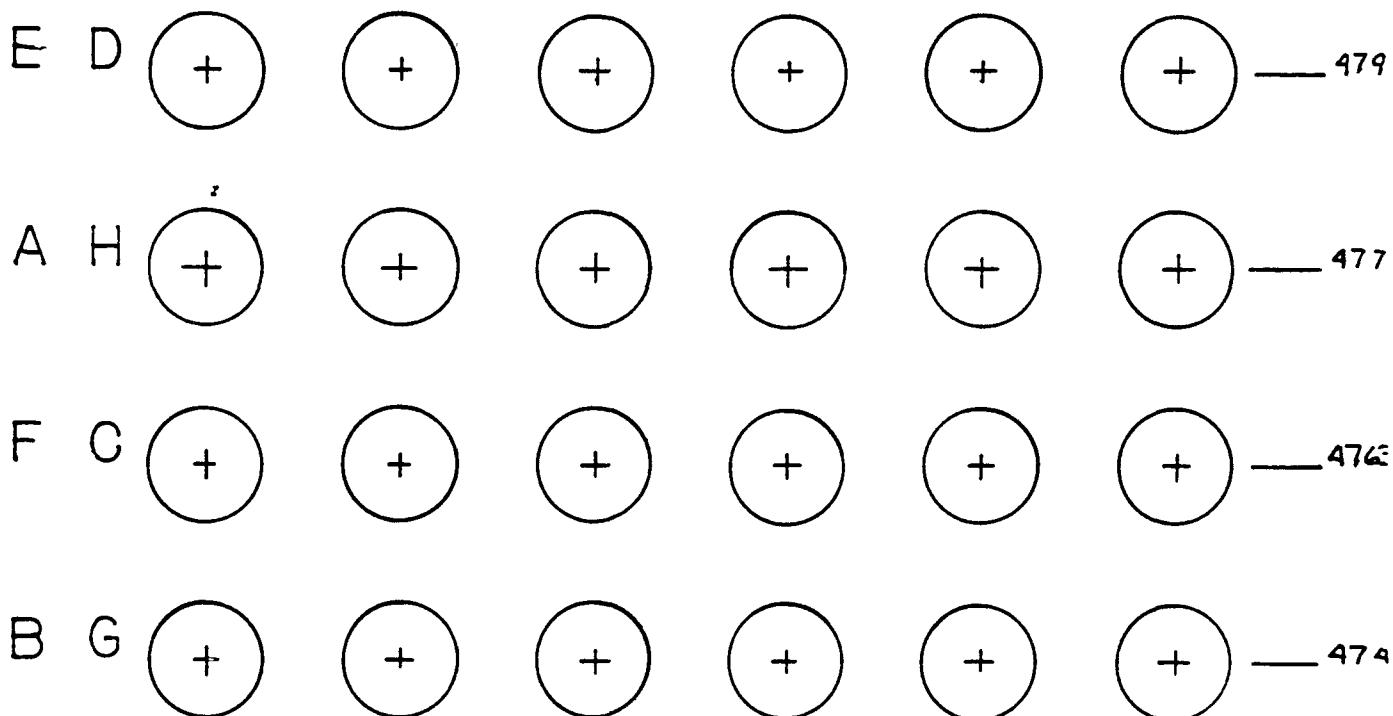


FIGURE 2

Babcock & Wilcox

DEPARTMENT TECHNOLOGY

DATE 12-14-90

BY JEH

REVISION

CHECKED DATE

BY

JOB NO. RB-614

SHEET 01

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RB-614

10 Dec 1990

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TEST NO.	1	2	3	2R	5	6	7	8	9	10	11
TEST SEQ. NO.	1	2	3	4	5	6	7	8	9	10	11
DATE	22Aug90	22Aug90	22Aug90	23Aug90	24Aug90	24Aug90	27Aug90	27Aug90	28Aug90	28Aug90	28Aug90
TIME START	1050	1500	0555	1130	0040	0440	0910	1330	0930	1330	1655
TIME END	1305	1705	0720	1340	0250	0650	1115	1530	1130	1540	1900
LOAD MW	868	866	789	873	442	586	873	868	870	867	867
FUEL	COAL	COAL	COAL	COAL	COAL	COAL	COAL	COAL	COAL	COAL	COAL
ALPHA1	COOL AIR	COOL AIR	VLV PT 3	COOL AIR	REHEAT	VLV PT 2	COOL AIR	COOL AIR	COOL AIR	TURB VWO	COOL AIR
ALPHA2	1200 F	1150 F		1150 F	CNTL	1350 F	1150 F	1150 F	RATED P	1350 F	

- 1 TURB VLV PT VWO : MILLS I/S ABCD FGH : COOLING AIR @ 1200 F
 2 TURB VLV PT VWO : MILLS I/S ABCD FGH : COOLING AIR @ 1150 F
 3 TURB VLV PT #3 : MILLS I/S ABCDE G :
 2R TURB VLV PT VWO : MILLS I/S ABCD FGH : COOLING AIR @ 1150 f
 5 TURB VLV PT : MILLS I/S ABCD : REHEAT CONTROL LOAD
 6 TURB VLV PT #2 : MILLS I/S ABCD F :
 7 TURB VLV PT VWO : MILLS I/S ABCDE GH : COOLING AIR @ 1350 F
 8 TURB VLV PT VWO : MILLS I/S ABCDE GH : COOLING AIR @ 1150 F
 9 TURB VLV PT VWO : MILLS I/S BCDEFGH : COOLING AIR @ 1150 F
 10 TURB VLV PT VWO : MILLS I/S ABCDEFGH : RATED THROTTLE PRES
 11 TURB VLV PT VWO : MILLS I/S BCDEFGH : COOLING AIR @ 1350 F

DATA PAGE NO. 2 FLOWS MLB/HR

LOAD MW	XI027A	868.0	865.5	788.6	873.1	442.2	585.6	872.6	868.0	870.2	866.9	866.7	2 1 <tr> <td>HP STEAM FLOW</td><td>XI023A</td><td>6462.4</td><td>6429.3</td><td>5559.6</td><td>6400.5</td><td>2892.4</td><td>3907.0</td><td>6391.8</td><td>6391.7</td><td>6368.1</td><td>6346.1</td><td>6365.8</td><td>2 2</td></tr> <tr> <td>FW FLOW</td><td>XI021A</td><td>6427.7</td><td>6392.2</td><td>5413.7</td><td>6363.1</td><td>2699.3</td><td>3798.7</td><td>6275.2</td><td>6328.8</td><td>6326.8</td><td>6285.7</td><td>6324.4</td><td>2 3</td></tr> <tr> <td>BLOW DOWN FLOW</td><td></td><td>0.0</td><td>0.0</td><td>0.0</td><td>0.0</td><td>0.0</td><td>0.0</td><td>0.0</td><td>0.0</td><td>0.0</td><td>0.0</td><td>0.0</td><td>2 4</td></tr> <tr> <td>RH-1 SP FLOW</td><td>FT0020</td><td>48.25</td><td>34.25</td><td>20.06</td><td>42.61</td><td>0.00</td><td>0.00</td><td>48.44</td><td>39.56</td><td>41.57</td><td>35.64</td><td>23.11</td><td>2 5</td></tr> <tr> <td>SH-1 SP FLOW</td><td>W XI097A</td><td>23.82</td><td>21.69</td><td>16.95</td><td>23.95</td><td>32.49</td><td>14.82</td><td>21.77</td><td>19.96</td><td>21.75</td><td>19.05</td><td>16.61</td><td>2 7</td></tr> <tr> <td>SH-1 SP FLOW</td><td>E XI096A</td><td>7.46</td><td>8.51</td><td>7.44</td><td>8.25</td><td>24.03</td><td>8.33</td><td>7.99</td><td>8.96</td><td>7.93</td><td>8.84</td><td>9.24</td><td>2 8</td></tr> <tr> <td>SH-2 SP FLOW</td><td>W XI092A</td><td>11.53</td><td>10.29</td><td>71.58</td><td>12.28</td><td>69.29</td><td>52.10</td><td>56.56</td><td>27.56</td><td>19.26</td><td>25.81</td><td>7.70</td><td>2 9</td></tr> <tr> <td>SH-2 SP FLOW</td><td>E XI091A</td><td>16.49</td><td>15.74</td><td>71.84</td><td>16.96</td><td>69.90</td><td>52.01</td><td>56.93</td><td>27.17</td><td>15.99</td><td>26.59</td><td>15.05</td><td>2 10</td></tr> <tr> <td>TOTAL AIR FLOW</td><td>XI078A</td><td>75.67</td><td>76.55</td><td>70.85</td><td>77.30</td><td>49.68</td><td>57.59</td><td>73.98</td><td>74.75</td><td>76.35</td><td>71.13</td><td>72.81</td><td>2 18</td></tr> <tr> <td>TOTAL FUEL FLOW</td><td>XI001A</td><td>316.6</td><td>317.6</td><td>296.2</td><td>327.2</td><td>171.0</td><td>221.2</td><td>319.9</td><td>324.5</td><td>317.3</td><td>319.0</td><td>317.8</td><td>2 19</td></tr>	HP STEAM FLOW	XI023A	6462.4	6429.3	5559.6	6400.5	2892.4	3907.0	6391.8	6391.7	6368.1	6346.1	6365.8	2 2	FW FLOW	XI021A	6427.7	6392.2	5413.7	6363.1	2699.3	3798.7	6275.2	6328.8	6326.8	6285.7	6324.4	2 3	BLOW DOWN FLOW		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2 4	RH-1 SP FLOW	FT0020	48.25	34.25	20.06	42.61	0.00	0.00	48.44	39.56	41.57	35.64	23.11	2 5	SH-1 SP FLOW	W XI097A	23.82	21.69	16.95	23.95	32.49	14.82	21.77	19.96	21.75	19.05	16.61	2 7	SH-1 SP FLOW	E XI096A	7.46	8.51	7.44	8.25	24.03	8.33	7.99	8.96	7.93	8.84	9.24	2 8	SH-2 SP FLOW	W XI092A	11.53	10.29	71.58	12.28	69.29	52.10	56.56	27.56	19.26	25.81	7.70	2 9	SH-2 SP FLOW	E XI091A	16.49	15.74	71.84	16.96	69.90	52.01	56.93	27.17	15.99	26.59	15.05	2 10	TOTAL AIR FLOW	XI078A	75.67	76.55	70.85	77.30	49.68	57.59	73.98	74.75	76.35	71.13	72.81	2 18	TOTAL FUEL FLOW	XI001A	316.6	317.6	296.2	327.2	171.0	221.2	319.9	324.5	317.3	319.0	317.8	2 19
HP STEAM FLOW	XI023A	6462.4	6429.3	5559.6	6400.5	2892.4	3907.0	6391.8	6391.7	6368.1	6346.1	6365.8	2 2																																																																																																																																												
FW FLOW	XI021A	6427.7	6392.2	5413.7	6363.1	2699.3	3798.7	6275.2	6328.8	6326.8	6285.7	6324.4	2 3																																																																																																																																												
BLOW DOWN FLOW		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2 4																																																																																																																																												
RH-1 SP FLOW	FT0020	48.25	34.25	20.06	42.61	0.00	0.00	48.44	39.56	41.57	35.64	23.11	2 5																																																																																																																																												
SH-1 SP FLOW	W XI097A	23.82	21.69	16.95	23.95	32.49	14.82	21.77	19.96	21.75	19.05	16.61	2 7																																																																																																																																												
SH-1 SP FLOW	E XI096A	7.46	8.51	7.44	8.25	24.03	8.33	7.99	8.96	7.93	8.84	9.24	2 8																																																																																																																																												
SH-2 SP FLOW	W XI092A	11.53	10.29	71.58	12.28	69.29	52.10	56.56	27.56	19.26	25.81	7.70	2 9																																																																																																																																												
SH-2 SP FLOW	E XI091A	16.49	15.74	71.84	16.96	69.90	52.01	56.93	27.17	15.99	26.59	15.05	2 10																																																																																																																																												
TOTAL AIR FLOW	XI078A	75.67	76.55	70.85	77.30	49.68	57.59	73.98	74.75	76.35	71.13	72.81	2 18																																																																																																																																												
TOTAL FUEL FLOW	XI001A	316.6	317.6	296.2	327.2	171.0	221.2	319.9	324.5	317.3	319.0	317.8	2 19																																																																																																																																												

DATA PAGE NO. 3 FLUID TEMPERATURES F - PLANT

SSH OUT T (P)	TE0002	996.2	998.2	1005.9	1004.0	1005.1	1006.3	1005.7	1007.5	1006.7	1004.9	1003.5	3 1 <tr> <td>TURB THROT T (P)</td><td>XI015A</td><td>994.4</td><td>996.8</td><td>1004.5</td><td>1002.7</td><td>1005.1</td><td>1005.1</td><td>1005.0</td><td>1005.0</td><td>1004.5</td><td>1004.5</td><td>1001.7</td><td>3 3</td></tr> <tr> <td>ECON IN T (P)</td><td>XI025A</td><td>549.5</td><td>549.3</td><td>537.5</td><td>549.9</td><td>475.5</td><td>502.3</td><td>550.7</td><td>550.2</td><td>549.8</td><td>549.7</td><td>549.3</td><td>3 5</td></tr> <tr> <td>SH-1 SPRAY TEMP</td><td>TE0991</td><td>318.2</td><td>305.2</td><td>332.6</td><td>339.9</td><td>289.6</td><td>311.1</td><td>342.7</td><td>342.7</td><td>334.9</td><td>343.5</td><td>337.5</td><td>3 7</td></tr> <tr> <td>LVG 1st STG ATT(P)-W</td><td>TE0866</td><td>716.1</td><td>715.6</td><td>719.9</td><td>710.7</td><td>678.4</td><td>706.3</td><td>721.6</td><td>711.2</td><td>718.5</td><td>715.9</td><td>711.2</td><td>3 8</td></tr> <tr> <td>LVG 1st STG ATT(P)-E</td><td>TE0865</td><td>719.7</td><td>720.5</td><td>723.7</td><td>734.4</td><td>688.9</td><td>712.8</td><td>725.9</td><td>729.6</td><td>724.3</td><td>720.5</td><td>718.9</td><td>3 9</td></tr> <tr> <td>ENT 1st STG ATT(P)-W</td><td>TE0864</td><td>718.1</td><td>717.3</td><td>722.9</td><td>718.6</td><td>704.0</td><td>706.8</td><td>723.2</td><td>721.2</td><td>720.5</td><td>718.9</td><td>713.2</td><td>3 10</td></tr> <tr> <td>ENT 1st STG ATT(P)-E</td><td>TE0863</td><td>723.0</td><td>722.6</td><td>722.2</td><td>736.1</td><td>704.3</td><td>710.8</td><td>725.6</td><td>728.8</td><td>724.5</td><td>722.0</td><td>719.4</td><td>3 11</td></tr>	TURB THROT T (P)	XI015A	994.4	996.8	1004.5	1002.7	1005.1	1005.1	1005.0	1005.0	1004.5	1004.5	1001.7	3 3	ECON IN T (P)	XI025A	549.5	549.3	537.5	549.9	475.5	502.3	550.7	550.2	549.8	549.7	549.3	3 5	SH-1 SPRAY TEMP	TE0991	318.2	305.2	332.6	339.9	289.6	311.1	342.7	342.7	334.9	343.5	337.5	3 7	LVG 1st STG ATT(P)-W	TE0866	716.1	715.6	719.9	710.7	678.4	706.3	721.6	711.2	718.5	715.9	711.2	3 8	LVG 1st STG ATT(P)-E	TE0865	719.7	720.5	723.7	734.4	688.9	712.8	725.9	729.6	724.3	720.5	718.9	3 9	ENT 1st STG ATT(P)-W	TE0864	718.1	717.3	722.9	718.6	704.0	706.8	723.2	721.2	720.5	718.9	713.2	3 10	ENT 1st STG ATT(P)-E	TE0863	723.0	722.6	722.2	736.1	704.3	710.8	725.6	728.8	724.5	722.0	719.4	3 11
TURB THROT T (P)	XI015A	994.4	996.8	1004.5	1002.7	1005.1	1005.1	1005.0	1005.0	1004.5	1004.5	1001.7	3 3																																																																																																		
ECON IN T (P)	XI025A	549.5	549.3	537.5	549.9	475.5	502.3	550.7	550.2	549.8	549.7	549.3	3 5																																																																																																		
SH-1 SPRAY TEMP	TE0991	318.2	305.2	332.6	339.9	289.6	311.1	342.7	342.7	334.9	343.5	337.5	3 7																																																																																																		
LVG 1st STG ATT(P)-W	TE0866	716.1	715.6	719.9	710.7	678.4	706.3	721.6	711.2	718.5	715.9	711.2	3 8																																																																																																		
LVG 1st STG ATT(P)-E	TE0865	719.7	720.5	723.7	734.4	688.9	712.8	725.9	729.6	724.3	720.5	718.9	3 9																																																																																																		
ENT 1st STG ATT(P)-W	TE0864	718.1	717.3	722.9	718.6	704.0	706.8	723.2	721.2	720.5	718.9	713.2	3 10																																																																																																		
ENT 1st STG ATT(P)-E	TE0863	723.0	722.6	722.2	736.1	704.3	710.8	725.6	728.8	724.5	722.0	719.4	3 11																																																																																																		

TEST NO.	1	2	3	2R	5	6	7	8	9	10	11
TEST SEQ. NO.	1	2	3	4	5	6	7	8	9	10	11
DATE	22Aug90	22Aug90	22Aug90	23Aug90	24Aug90	24Aug90	27Aug90	27Aug90	28Aug90	28Aug90	28Aug90
TIME START	1050	1500	0555	1130	0040	0440	0910	1330	0930	1330	1655
TIME END	1305	1705	0720	1340	0250	0650	1115	1530	1130	1540	1900
LOAD MW	868	866	789	873	442	586	873	868	870	867	867

DATA PAGE NO. 3 FLUID TEMPERATURES F - PLANT

LVG RH-1 T (P)-N	TE0011	998.3	999.3	1003.4	1008.0	994.4	1001.7	1002.0	1005.8	1004.8	1006.2	1004.9	3 12
LVG RH-1 T (P)-S	TE0015	1001.3	1000.9	1006.3	1013.2	995.4	1002.1	1007.1	1009.8	1008.9	1009.5	1007.9	3 13
HRH AT TURB (P)-N	TE0013	1000.1	1001.1	1004.6	1010.6	997.0	1003.4	1004.6	1007.3	1007.7	1007.9	1006.7	3 14
HRH AT TURB (P)-S	TE0016	1002.9	1002.4	1008.3	1013.4	995.8	1003.3	1008.5	1012.4	1011.2	1011.2	1009.3	3 15
ENT RH-1 T (P)	XI107A	618.0	619.5	606.4	625.4	573.8	561.8	626.7	626.7	626.3	626.6	624.1	3 16
CRH ENT ATT (P)	TE0024	618.3	620.2	606.6	626.9	575.0	563.3	629.3	630.1	627.7	628.1	626.0	3 18
RH DSUPHTR INL T (P)	XI106A	617.2	618.9	605.6	624.5	553.3	561.1	626.1	626.1	625.6	625.9	623.3	3 19
RH-1 SPRAY T (P)	TE0060	106.8	106.8	104.6	101.1	103.2	103.2	229.2	229.2	236.3	233.7	233.7	3 20
LVG 2nd STG AT (P)-W	TE0873	768.3	769.9	766.6	755.6	721.3	749.8	767.1	757.7	773.3	766.1	761.8	3 21
LVG 2nd STG AT (P)-E	TE0874	785.0	787.3	771.6	808.2	751.5	765.1	785.0	802.0	789.1	781.4	791.0	3 22
ENT 2nd STG AT (P)-W	TE0871	768.4	770.2	794.2	757.3	785.6	773.9	784.7	765.1	778.1	775.3	761.7	3 23
ENT 2nd STG AT (P)-E	TE0872	786.1	786.9	796.3	810.1	805.7	791.1	801.5	809.0	791.5	790.1	791.1	3 24
ECON OUT T (P)	TE0861	576.6	576.6	562.4	577.0	508.1	530.4	577.8	577.8	576.2	576.2	572.2	3 27
ECON OUT T (P)	TE0862	576.2	576.2	563.7	576.6	506.1	530.4	577.6	579.9	575.8	575.8	571.8	3 28
SAT CON TUBE(P)	TE0448	680.4	680.4	675.5	678.4	628.1	671.1	680.4	680.4	677.6	677.6	677.6	3 29

DATA PAGE NO. 5 FLUID PRESSURES PSIG

SEC SH OUT PRESS (P)	PT0001	2404.4	2400.6	2402.7	2399.5	1818.7	2401.2	2406.1	2404.1	2395.9	2394.2	2393.6	5 2
DRUM PRESS (P)	XI043A	2651.7	2648.8	2589.0	2646.2	1881.9	2486.8	2653.2	2650.8	2642.9	2640.1	2639.3	5 3
HRH RH-1 PRESS (P)	KV0015	522.2	520.7	462.7	522.5	252.3	335.4	523.3	522.4	520.2	520.2	520.1	5 4
CRH RH-1 PRESS (P)	PT0012	556.8	555.5	494.2	557.1	269.3	357.5	558.3	557.5	555.1	555.2	554.4	5 5
NO.1 HTR EXT P (P)-A	PT0021	1046.8	1047.0	925.4	1049.1	505.9	664.5	1052.3	1051.4	1046.4	1046.7	1045.8	5 6
NO.1 HTR EXT P (P)-B	PT0022	1044.8	1044.8	923.6	1047.1	505.5	664.2	1050.5	1049.4	1044.4	1044.3	1043.8	5 7
NO.2 HTR EXT P (P)-A	PT0019	547.8	546.8	486.8	548.7	266.6	353.1	549.8	548.7	546.5	546.3	545.8	5 8
NO.2 HTR EXT P (P)-B	PT0020	549.8	549.0	488.6	550.7	265.7	353.6	552.0	551.0	548.6	548.3	548.3	5 9
ECON IN PRESS (P)	PT0032	2760.2	2758.3	2684.4	2756.3	1948.8	2568.1	2762.8	2760.5	2753.0	2750.8	2750.8	5 12
SEC SH IN PRES (P) E	PT0198	2462.4	2587.7	2550.7	2588.5	1881.7	2483.2	2596.0	2594.8	2585.7	2583.0	2583.5	5 13
SEC SH IN PRES (P) W	PT0199	2595.7	2590.2	2551.8	2589.9	1882.1	2482.9	2598.5	2596.1	2587.3	2585.6	2583.9	5 14

DATA PAGE NO. 6 AIR & GAS DATA - PLANT

AMBIENT AIR TEMP	KK0531	81.14	88.91	66.77	84.91	74.39	70.01	81.32	91.13	81.15	93.14	97.29	6 1
AIR ENT SEC AH (P)-A	TE0938	82.05	88.94	70.10	84.86	79.06	75.34	81.78	90.55	81.43	92.55	96.32	6 2
AIR ENT SEC AH (P)-B	TE0940	81.56	89.69	72.77	85.01	83.14	79.02	81.92	91.13	81.53	93.53	97.73	6 3
AIR ENT PRI AH (P)-A	TE0911	102.0	108.9	93.2	105.0	107.6	100.4	102.6	111.3	102.1	112.5	116.7	6 4
AIR ENT PRI AH (P)-B	TE0912	100.6	108.2	94.4	104.5	107.6	100.2	101.9	110.7	101.6	112.6	117.0	6 5
AIR LVG SEC AH (P)-A	XI149A	666.6	664.7	644.1	654.3	594.2	610.9	663.5	673.4	655.3	669.8	664.9	6 6
AIR LVG SEC AH (P)-B	XI150A	668.5	665.6	646.5	662.4	600.8	616.3	662.3	671.9	658.3	670.6	666.4	6 7
AIR LVG PRI AH (P)-A	TE0917	513.1	506.4	509.8	506.4	502.0	503.2	511.7	510.8	509.8	507.8	506.3	6 8
AIR LVG PRI AH (P)-B	TE0918	496.0	487.6	490.2	484.4	486.1	486.3	492.2	487.1	489.1	486.4	486.4	6 9
GAS LVG SEC AH (P)-A	TE0927	293.0	294.6	280.0	292.0	265.4	273.3	289.0	294.0	287.8	300.0	297.3	6 10
GAS LVG SEC AH (P)-B	TE0929	316.9	321.4	286.8	310.6	256.3	269.5	314.9	325.8	309.0	331.3	326.2	6 11

TEST NO.	1	2	3	2R	5	6	7	8	9	10	11
TEST SEQ. NO.	1	2	3	4	5	6	7	8	9	10	11
DATE	22Aug90	22Aug90	22Aug90	23Aug90	24Aug90	24Aug90	27Aug90	27Aug90	28Aug90	28Aug90	28Aug90
TIME START	1050	1500	0555	1130	0040	0440	0910	1330	0930	1330	1655
TIME END	1305	1705	0720	1340	0250	0650	1115	1530	1130	1540	1900
LOAD MW	868	866	789	873	442	586	873	868	870	867	867

DATA PAGE NO. 6 AIR & GAS DATA - PLANT

GAS LVG PRI AH (P)-A	TE0913	299.0	297.7	296.6	298.0	284.6	290.7	295.8	295.7	296.2	300.1	296.9	6 12
GAS LVG PRI AH (P)-B	TE0916	297.4	296.4	297.6	295.5	291.7	293.3	295.7	292.6	295.4	297.5	296.4	6 13
GAS LVG ECON (P)-E	TE0737	735.9	726.9	722.0	728.2	653.4	685.6	727.0	736.2	722.5	732.0	739.6	6 14
GAS LVG ECON (P)-W	TE0710	734.4	726.1	725.6	719.3	663.8	962.5	725.1	733.2	721.5	731.5	739.6	6 15
O2 LVG ECON (P)-W	AZ0023	2.5000	2.5000	2.5000	2.5000	2.5000	2.5000	2.5000	2.5000	2.5000	2.5000	2.5000	6 20
O2 LVG ECON (P)-E	AZ0022	2.5000	2.5000	2.5000	2.5000	2.5000	2.5000	2.5000	2.5000	2.5000	2.5000	2.5000	6 21
NOX @ STACK (P)	KK0006	272.6	262.1	224.7	272.0	188.0	203.2	253.5	218.3	204.6	242.9	211.8	6 24
O2 @ STACK (P)	KK0008	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	1.1200	1.1200	0.0000	0.0000	0.0000	6 25
STACK O2/CO2 (P)	KK0008	5.3822	5.5517	5.6461	5.5105	8.7019	7.2427	4.9577	5.0431	5.4146	4.9429	4.9619	13 25
BAROMETRIC PRESS (P)	PT0227	25.46	25.44	25.33	25.34	25.28	25.28	25.53	25.55	25.56	25.56	25.51	6 29
DRY BULB TEMP (B)	TC	75.93	83.31	65.78	79.18	74.48	70.05	77.23	85.26	75.80	87.34	91.23	7 26
WET BULB TEMP (B)	TC	52.99	54.60	49.45	53.96	52.01	50.04	53.15	55.94	53.34	55.11	55.39	7 27
MOIST IN AIR (B)	CALC	.0048	.0041	.0051	.0047	.0046	.0045	.0046	.0045	.0050	.0035	.0028	7 28
REL HUMIDITY (P)	KK0530	21.71	14.63	32.40	19.00	21.79	24.59	19.90	14.97	22.78	10.94	7.79	7 30
PLANT O2 (OLD) (P) E	XI0079	3.0200	3.3706	3.4861	2.4973	6.6285	4.8242	2.5781	2.4608	3.1365	3.1300	2.9131	9 29
PLANT O2 (OLD) (P) W	XI0080	3.7067	3.8000	3.4578	4.3041	6.3054	5.1888	3.0915	3.4092	3.6238	2.8854	3.2965	9 30

DATA PAGE NO. 7 AIR & GAS DATA - B&W

AIR ENT SEC AH (B) W	GRID	80.46	88.07	70.32	83.83	78.35	74.49	81.90	89.83	80.51	91.97	95.73	7 2
AIR ENT SEC AH (B) E	GRID	81.36	87.57	68.02	84.41	76.91	73.26	82.26	89.69	80.90	91.73	95.13	7 3
AIR ENT PRI AH (B) W	GRID	101.6	109.1	94.1	105.3	106.9	99.9	104.1	111.7	102.8	113.5	117.6	7 4
AIR ENT PRI AH (B) E	GRID	103.3	109.2	93.1	106.1	107.2	99.8	104.6	112.0	103.4	113.7	117.9	7 5
AIR LVG PRI AH (B) W	GRID	507.9	500.7	504.1	494.1	496.0	499.5	503.6	498.1	499.4	498.9	500.0	7 8
AIR LVG PRI AH (B) E	GRID	520.1	515.3	519.2	513.3	507.4	512.9	517.0	516.3	515.7	515.3	513.8	7 9
GAS LVG PRI AH (B) W	GRID	288.7	287.4	287.7	286.8	287.7	287.5	287.7	285.9	286.6	288.8	288.3	7 12
GAS LVG PRI AH (B) E	GRID	308.6	307.2	308.0	308.7	298.2	303.0	306.6	306.2	307.0	309.1	307.1	7 13
GAS LVG ECON (B) W	GRID	738.9	734.7	726.3	728.3	666.0	686.5	733.2	740.5	728.4	734.4	736.9	7 14
GAS LVG ECON (B) E	GRID	739.7	735.3	724.5	735.3	667.7	688.3	733.9	743.7	731.7	736.5	738.2	7 15
GAS ENT PRI AH (B) W	GRID	724.0	719.9	713.5	709.1	650.6	675.1	717.3	718.6	713.8	719.2	725.9	7 18
GAS ENT PRI AH (B) E	GRID	723.6	719.0	712.6	720.2	655.6	675.9	719.5	728.8	718.4	723.2	724.9	7 19
O2 LVG ECON (B) W	TELE	3.9494	4.8192	3.8871	4.6882	6.8647	5.6859	3.5774	3.7503	4.0781	3.1791	3.6509	7 20
O2 LVG ECON (B) E	TELE	3.6665	3.9157	3.7269	3.0086	6.9536	5.1206	2.8078	2.6809	3.3354	3.0294	2.7651	7 21
O2 LVG ECON (B) W	L&N	3.9494	4.8192	3.8871	4.6882	6.8647	5.6859	3.5774	3.7503	4.0781	3.1791	3.6509	12 19
O2 LVG ECON (B) E	L&N	3.6665	3.9157	3.7269	3.0086	6.9536	5.1206	2.8078	2.6809	3.3354	3.0294	2.7651	12 20
CO2 LVG ECON (B) W	MSA	15.23	14.02	15.44	14.36	12.44	13.63	14.70	15.61	15.23	15.78	15.26	7 22
CO2 LVG ECON (B) E	MSA	15.62	15.16	15.57	16.21	12.88	14.40	15.48	16.63	15.91	16.31	16.23	7 23
CO LVG ECON PPM E	MSA	20.0	5.1	54.1	21.2	41.2	34.9	145.2	799.0	73.4	28.1	214.8	13 26
CO LVG ECON PPM W	MSA	19.53	28.90	38.27	15.82	70.92	47.45	85.52	33.14	45.11	8.32	31.87	13 27

IP7_038484

TEST NO.	1	2	3	2R	5	6	7	8	9	10	11
TEST SEQ. NO.	1	2	3	4	5	6	7	8	9	10	11
DATE	22Aug90	22Aug90	22Aug90	23Aug90	24Aug90	24Aug90	27Aug90	27Aug90	28Aug90	28Aug90	28Aug90
TIME START	1050	1500	0555	1130	0040	0440	0910	1330	0930	1330	1655
TIME END	1305	1705	0720	1340	0250	0650	1115	1530	1130	1540	1900
LOAD MW	868	866	789	873	442	586	873	868	870	867	867

DATA PAGE NO. 8 FW HTR TEMPERATURES F - PLANT

NO.1 HTR EXT T (P)-A	TE0030	787.9	751.1	772.8	797.0	727.0	716.1	800.8	799.1	797.8	799.0	796.0	8 1
NO.1 HTR EXT T (P)-B	TE0031	788.5	791.4	772.8	797.4	728.2	713.6	800.9	800.4	799.0	800.4	794.9	8 2
NO.2 HTR EXT T (P)-A	TE0028	618.0	620.0	605.8	624.9	572.2	559.6	625.7	625.7	627.9	626.5	624.3	8 3
NO.2 HTR EXT T (P)-B	TE0029	618.0	620.0	605.3	626.3	573.0	562.8	626.1	626.1	626.5	628.1	625.4	8 4
NO.1 FW LVG T (P)-A	TE0059	552.0	550.4	539.1	551.1	477.9	503.8	552.9	551.2	532.4	551.7	550.7	8 5
NO.1 FW LVG T (P)-B	TE0154	550.8	550.4	538.8	551.1	477.3	504.4	551.8	551.5	551.1	551.3	550.9	8 6
NO.1 FW ENT T (P)-A	TE0055	478.7	477.1	467.3	479.1	413.0	436.6	479.3	479.3	477.9	477.9	477.9	8 7
NO.1 FW ENT T (P)-B	TE0056	478.5	478.5	468.1	478.9	413.2	437.0	479.3	479.3	478.2	478.2	478.2	8 8
NO.2 FW ENT T (P)-A	TE0053	395.8	394.2	386.4	396.1	343.2	363.1	396.1	396.1	394.7	395.7	394.7	8 11
NO.2 FW ENT T (P)-B	TE0054	395.3	395.3	386.7	396.2	342.2	363.4	395.6	395.6	395.4	395.3	395.2	8 12
NO.1 DRAIN T (P)-A	TE0185	487.9	486.4	475.7	487.5	417.0	442.1	487.5	487.5	487.1	487.1	487.1	8 13
NO.1 DRAIN T (P)-B	TE0186	486.2	486.2	474.3	486.7	415.5	440.7	487.1	487.1	486.2	486.2	486.2	8 14
NO.2 DRAIN T (P)-A	TE0183	404.4	403.9	393.7	404.1	346.9	367.3	404.7	404.7	404.1	403.9	403.9	8 15
NO.2 DRAIN T (P)-B	TE0184	403.5	401.9	393.7	403.0	346.6	366.9	403.3	403.3	403.3	403.3	401.7	8 16
INT SSH MANIF (P)-1	TE0521	851.3	852.1	861.2	842.1	828.4	837.2	852.7	845.2	856.7	852.2	841.6	8 17
INT SSH MANIF (P)-2	TE0522	892.3	889.4	905.1	872.9	902.0	899.2	898.3	888.7	896.3	893.4	892.3	8 18
INT SSH MANIF (P)-3	TE0523	887.2	884.9	898.9	871.7	893.5	898.9	904.5	893.4	896.9	891.1	895.6	8 19
INT SSH MANIF (P)-4	TE0524	885.6	883.0	892.0	869.7	881.7	894.7	907.4	885.7	899.8	889.5	889.6	8 20
INT SSH MANIF (P)-5	TE0525	883.0	885.4	889.6	866.1	876.6	890.0	898.0	872.9	898.4	885.7	880.9	8 21
INT SSH MANIF (P)-6	TE0526	880.4	885.0	841.3	864.6	875.1	880.7	882.6	862.4	887.7	880.3	873.4	8 22
INT SSH MANIF (P)-7	TE0527	888.8	897.3	892.5	873.6	886.0	880.9	878.0	864.1	888.2	889.0	879.8	8 23
INT SSH MANIF (P)-8	TE0528	908.7	913.5	909.8	944.1	928.9	902.0	898.8	932.5	912.0	918.6	918.2	8 24
INT SSH MANIF (P)-9	TE0529	898.3	900.4	898.5	928.9	923.0	895.8	900.5	930.9	909.7	913.8	910.2	8 25
INT SSH MANIF (P)-10	TE0530	894.7	892.5	892.3	919.0	910.4	892.1	907.7	934.6	907.6	907.8	908.6	8 26
INT SSH MANIF (P)-11	TE0531	904.3	900.1	900.6	927.0	912.2	903.0	920.7	938.7	920.8	918.2	921.5	8 27
INT SSH MANIF (P)-12	TE0532	902.7	898.2	892.3	922.8	898.7	903.0	909.3	932.2	917.3	908.4	917.7	8 28
INT SSH MANIF (P)-13	TE0533	903.5	905.9	890.5	920.8	878.6	902.5	903.8	921.3	910.0	901.4	911.9	8 29
INT SSH MANIF (P)-14	TE0534	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8 30
INT SH MAN LEG(P)-23	TE0543	914.1	913.3	904.8	935.5	916.6	912.8	921.9	945.4	930.5	929.9	936.1	9 25
INT SH MAN LEG(P)-24	TE0544	947.2	945.1	935.6	963.2	944.4	945.1	965.3	980.9	965.6	962.6	974.6	9 26

DATA PAGE NO. 10 FUEL FEED DATA - PLANT

PULV A COAL FLOW	XI002A	92.0	91.8	103.0	94.5	85.1	89.6	92.6	94.0	0.0	80.8	0.0	10 1
PULV B COAL FLOW	XI003A	91.0	90.9	102.4	93.8	78.7	88.8	91.8	93.2	91.4	79.8	91.4	10 2
PULV C COAL FLOW	XI004A	90.39	90.14	94.26	93.12	83.66	88.23	91.08	92.36	90.56	79.18	90.62	10 3
PULV D COAL FLOW	XI005A	92.8	92.6	103.9	95.6	97.1	90.6	93.4	94.8	93.2	81.6	93.2	10 4
PULV E COAL FLOW	XI006A	0.00	0.00	99.08	0.00	0.00	0.00	90.82	92.20	90.38	79.44	90.64	10 5
PULV F COAL FLOW	XI007A	90.36	90.24	0.00	92.92	0.00	88.22	0.00	0.00	90.68	79.44	90.84	10 6
PULV G COAL FLOW	XI008A	91.2	90.9	102.2	93.9	0.0	0.0	92.0	93.4	91.6	80.4	91.6	10 7
PULV H COAL FLOW	XI009A	92.75	92.49	0.00	95.32	0.00	0.00	93.48	94.76	92.86	81.62	93.22	10 8
PULV A PA FLOW	XI056A	210.1	208.3	210.4	209.5	206.6	208.1	206.4	207.4	0.0	199.7	0.0	10 16
PULV B PA FLOW	XI057A	211.1	207.4	211.6	209.7	201.9	209.5	210.3	209.1	208.1	201.4	207.2	10 17
PULV C PA FLOW	XI058A	213.2	217.6	209.0	204.4	198.8	201.1	204.1	205.9	204.7	200.9	208.4	10 18

TEST NO.	TEST SEQ. NO.	1	2	3	2R	5	6	7	8	9	10	11
DATE	22Aug90	22Aug90	22Aug90	4	5	6	7	8	9	10	11	
TIME START	1500	1500	1500	23Aug90	24Aug90	24Aug90	27Aug90	27Aug90	28Aug90	28Aug90	29Aug90	
TIME END	1305	1705	0555	1130	0040	0440	0910	0910	0930	1330	1655	
LOAD MW	868	866	0720	1340	0250	0650	1115	1115	1130	1540	1800	

DATA PAGE NO. 10 FUEL FEED DATA - PLANT

PULV D PA FLOW	X1059A	205.0	203.2	209.0	205.3	209.2	201.4	208.9	208.5	205.5	198.3	204.2	10.19
PULV E PA FLOW	X1060A	213.0	0.0	190.9	0.0	0.0	0.0	195.6	196.1	193.7	205.8	198.0	10.20
PULV F PA FLOW	X1061A	217.5	0.0	217.1	0.0	0.0	220.4	210.1	209.0	187.4	215.5	195.4	10.21
PULV G PA FLOW	X1062A	218.9	206.7	207.2	207.2	0.0	0.0	210.1	209.4	205.4	196.5	215.7	10.22
PULV H PA FLOW	X1063A	216.3	219.2	0.0	215.8	0.0	0.0	225.4	226.3	224.0	215.4	221.3	10.23

DATA PAGE NO. 11 POWER & ELECTRICAL SYSTEM DATA

PULV A INLET T	TE0639	296.4	311.7	353.4	314.6	282.6	296.3	323.0	322.6	138.4	305.3	158.8	11.1	
PULV B INLET T	TE0640	282.2	308.5	336.4	306.1	277.5	278.8	299.7	316.0	313.1	300.2	320.7	11.2	
PULV C INLET T	TE0641	326.2	295.0	336.1	354.0	339.3	347.4	336.4	348.9	347.1	308.4	318.2	11.3	
PULV D INLET T	TE0642	311.3	326.7	341.3	322.5	301.0	323.5	295.4	308.0	321.0	311.1	329.5	11.4	
PULV E INLET T	TE0643	98.9	106.0	339.3	101.0	107.6	99.3	312.2	328.5	332.5	313.0	349.4	11.5	
PULV F INLET T	TE0644	303.4	315.5	100.8	336.2	113.6	280.4	100.6	106.9	311.4	281.7	300.9	11.6	
PULV G INLET T	TE0645	309.2	336.3	389.6	338.6	115.0	101.1	313.9	328.6	348.1	350.7	350.7	11.7	
PULV H INLET T	TE0646	353.7	338.2	97.9	406.5	104.5	98.8	327.6	330.5	336.6	338.1	356.1	11.8	
PULV A INLET T	TEMP TC	296.0	309.4	343.2	311.5	282.3	294.7	318.7	319.0	0.0	0.0	0.0	11.9	
PULV B INLET T	TEMP TC	262.0	282.7	304.6	279.0	259.5	260.4	275.6	288.8	281.8	277.9	291.0	11.10	
PULV C INLET T	TEMP TC	304.0	281.2	302.6	320.8	311.8	316.6	309.2	318.8	315.4	296.3	302.8	11.11	
PULV D INLET T	TEMP TC	311.0	321.9	327.5	316.3	302.8	321.8	295.6	305.8	310.4	311.8	319.7	11.12	
PULV E INLET T	TEMP TC	94.0	94.0	347.8	94.0	94.0	95.0	323.6	337.5	341.0	323.3	356.1	11.13	
PULV F INLET T	TEMP TC	283.0	291.9	94.0	302.4	94.0	261.4	0.0	0.0	292.8	270.6	268.0	11.14	
PULV G INLET T	TEMP TC	272.0	294.8	327.9	295.0	94.0	94.0	272.0	287.5	304.5	308.8	308.5	11.15	
PULV H INLET T	TEMP TC	315.0	307.7	94.0	364.0	94.0	95.0	296.5	299.2	311.1	317.6	330.0	10.14	
PULV A DIFF P	P10150	10.99	10.74	13.00	12.64	10.79	11.39	10.51	10.89	0.00	8.77	0.00	11.24	
PULV B DIFF P	P10151	11.58	11.10	12.54	12.33	9.73	11.50	11.02	10.69	10.62	8.59	10.27	11.25	
PULV C DIFF P	P10152	8.74	9.73	11.30	10.52	7.84	8.39	8.67	8.82	7.95	6.79	8.50	11.26	
PULV D DIFF P	P10153	10.71	10.58	12.47	11.85	12.45	10.59	11.20	11.56	10.44	8.33	10.42	11.27	
PULV E DIFF P	P10154	0.00	0.00	0.00	12.43	0.00	0.00	0.00	12.62	12.4	11.95	10.98	11.64	11.28
PULV F DIFF P	P10155	14.83	14.79	0.00	14.71	0.00	14.88	0.00	0.00	16.76	15.60	17.15	11.29	
PULV G DIFF P	P10156	13.24	12.98	15.11	14.39	0.00	0.00	12.56	12.76	11.99	9.88	12.49	11.30	
PULV H DIFF P	P10157	17.94	17.08	0.00	19.19	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.13

DATA PAGE NO. 12 OPERATOR POSITIONS

RH PASS DMPR	POS-B	PB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.16
RH PASS DMPR	POS-A	X1136A	67.7	52.3	78.0	43.0	100.0	100.0	43.2	40.9	49.1	59.0	87.7	9.28
SH PASS DMPR	POS-B	PB	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.18
SH PASS DMPR	POS-A	X1135A	75.75	89.23	66.74	97.46	20.00	26.64	97.27	99.25	92.04	83.41	58.03	9.27

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TEST NO.	1	2	3	2R	5	6	7	8	9	10	11
TEST SEQ NO.	1	2	3	4	5	6	7	8	9	10	11
DATE	22Aug90	22Aug90	22Aug90	23Aug90	24Aug90	24Aug90	27Aug90	27Aug90	28Aug90	28Aug90	28Aug90
TIME START	1050	1500	0555	1130	0040	0440	0910	1330	0930	1330	1655
TIME END	1305	1705	0720	1340	0250	0650	1115	1530	1130	1540	1900
LOAD MW	868	866	789	873	442	586	873	868	870	867	867

DATA PAGE NO. 13 MISCELLANEOUS GAS DATA

02	LVG PRI AH W	TRAV	7.96	7.82	8.00	8.16	10.56	9.34	8.24	7.69	8.09	7.41	7.62	13 5
02	LVG PRI AH E	TRAV	7.00	6.93	7.02	6.29	10.61	8.72	7.02	6.17	7.02	6.64	6.47	13 6
02	ENT PRI AH W	COMP O	3.8584	4.0393	3.8947	4.5870	6.5466	5.3901	3.7282	3.7015	4.0189	3.2292	3.6040	13 13
02	ENT PRI AH E	COMP O	3.3294	3.5020	3.6962	2.4172	6.8624	4.9631	2.7090	2.5895	3.6164	3.2523	2.8193	13 14
GAS	LVG RH PS (B)SW	GRID	752.9	751.5	734.0	740.7	707.3	712.1	743.8	750.5	739.7	745.9	754.0	13 21
GAS	LVG RH PS (B)SE	GRID	742.7	736.8	726.9	733.7	704.7	709.9	738.8	745.4	738.8	741.0	748.7	13 22
GAS	LVG PSH PS (B)NW	GRID	716.5	714.5	705.6	711.2	591.3	636.1	718.8	726.3	711.2	714.5	706.6	13 23
GAS	LVG PSH PS (B)NE	GRID	724.5	722.6	707.8	723.7	590.9	637.9	720.2	732.0	715.6	720.3	711.9	13 24
A = RIGHT = EAST			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13 29

DATA PAGE NO. 14 MISCELLANEOUS DATA

02	ENT BAG HS E	TELE	4.3803	4.5850	4.8041	3.9654	7.9558	6.2956	4.3281	3.9041	4.3819	4.0403	3.7033	14 24
02	ENT BAG HS W	TELE	4.9333	5.1273	5.1771	5.4818	8.3068	6.9716	4.9357	4.5060	4.8892	3.9733	4.3742	14 25
GAS	ENT BAG HS W	GRID	294.2	295.9	270.3	282.3	246.7	258.1	269.2	296.5	287.5	304.3	306.5	14 26
GAS	ENT BAG HS E	GRID	294.7	290.4	268.9	283.7	248.5	258.9	260.4	289.3	280.3	299.4	299.7	14 27

DATA PAGE NO. 15 MISCELLANEOUS DATA

PRI AH AIR-GAS DP W	MANO	47.00	47.90	46.00	47.54	44.00	44.80	47.00	47.00	47.00	48.15	48.70	15 9
PRI AH AIR-GAS DP E	MANO	47.33	47.77	46.13	48.00	44.00	44.50	47.60	47.90	47.70	48.00	48.23	15 10
SEC AH AIR-GAS DP W	MANO	12.65	12.91	10.83	12.74	7.50	8.75	12.03	11.85	12.00	11.96	12.00	15 15
SEC AH AIR-GAS DP E	MANO	12.71	12.92	10.89	12.78	7.53	8.84	12.03	11.79	12.00	12.00	12.00	15 16
PRI AH GAS SIDE DP W	MAN	1.5100	1.6400	1.7000	1.8000	1.1200	1.3600	1.5500	1.5000	1.6000	1.6000	1.5000	15 19
PRI AH GAS SIDE DP E	MAN	2.0900	2.1400	2.2600	2.3200	1.4000	1.7100	2.0000	2.0000	2.1500	2.1800	2.2000	15 20
PRI AH AIR SIDE DP W	MAN	1.6200	1.7500	1.5900	1.6300	.8000	1.0500	1.3000	1.2800	1.3800	1.7400	1.7600	15 21
PRI AH AIR SIDE DP E	MAN	1.3900	1.3100	1.5000	1.7600	.6300	.9500	1.5800	1.6500	1.6800	1.4700	1.3600	15 22
SEC AH GAS SIDE DP W	MAN	3.8400	3.9300	3.1300	3.8400	1.7200	2.2200	3.6400	3.7900	3.7200	3.7000	3.7100	15 23
SEC AH GAS SIDE DP E	MAN	4.0000	4.0300	3.2400	3.9800	1.8000	2.3100	3.7100	3.8200	3.8500	3.8000	3.8300	15 24
SEC AH AIR SIDE DP W	MAN	2.4300	2.5300	2.1000	2.5400	1.0200	1.4000	2.3000	2.4200	2.4400	2.2200	2.3400	15 25
SEC AH AIR SIDE DP E	MAN	2.2700	2.3600	1.9300	2.3600	.9300	1.2000	2.1600	2.2700	2.2800	2.1000	2.1900	15 26

IP7_038488

		CONTRACT SUMMARY SHEET	TEST 1 CORRECTED FOR CONTR. CONDITIONS	TEST 1 WITH TEST CONDITIONS
Fuel		CONTRACT	CONTRACT	TEST
Air Temp Ent AH	PRI/SEC F	77/ 64	77/ 64	102/ 81
Air Temp Lvg AH	PRI/SEC F	582/ 647	0/ 0	514/ 668
Air Flow Lvg AH (1)	PRI/SEC MLB/HR	1335/5184	1491/5012	1491/5753
AH Air By-Pass Flow	MLB/HR	497.8	738.5	738.5
Mill Inlet Temp	F	397.2	0.0	311.9
Ave Air Temp Ent AH	F	66.7	67.0	85.3
Gas Temp Lvg Econ	F	736.0	739.3	739.3
Gas Temp Ent AH	PRI/SEC F	736/ 736	724/ 739	724/ 739
Gas Temp Lvg AH (Incl Lkg)	PRI/SEC F	279/ 282	-/-	299/ 294
Gas Temp Lvg AH (Excl Lkg)	PRI/SEC F	313/ 295	332/ 288	348/ 299
Gas Flow Ent AH	PRI/SEC MLB/HR	924/6286	768/6430	768/7205
Ave Gas Temp Lvg AH (Excl Lkg)	F	294.7	292.4	303.6
Excess Air Lvg Econ	%	17.0	17.0	21.7
Excess Air Ent Pri AH	%	---	17.0	20.2
Excess Air Ent Sec AH	%	---	17.0	21.7
Excess Air Lvg Sec AH	%	---	---	24.9
Excess Air Lvg Pri AH	%	---	---	54.2
Excess Air to Burners	%	15.0	15.0	19.7
Sec AH Leakage	MLB/HR	422	---	177
Pri AH Leakage	MLB/HR	0	---	201
Moisture In Air	LB/LB DA	.0067	.0067	.0048
Dry Gas Wt Lvg Econ	LB/LB Fuel	---	10.007	11.566
Dry Air Wt to Burners	LB/LB Fuel	---	9.478	10.974
Wet Gas Wt Lvg Econ	LB/LB Fuel	---	10.562	12.137
Losses %				
Dry Gas		4.84	4.92	5.01
H2O in Fuel	(2)	5.15	.87	.77
H2 in Fuel		---	4.28	4.13
Moisture in Air		.07	.06	.04
Unburned Combustible		.20	.03	.03
Radiation		.17	.17	.15
Unaccounted	(3)	1.00	.50	.50
Summation of Losses		11.43	10.83	10.63
Efficiency %		88.57	89.17	89.37
Unit Output	MKB	6691.5	6691.5	7096.2
Fuel Input	MKB	7555.0	7504.2	7940.2
Fuel Rate	MLB/HR	686.2	681.6	657.0

(1) Includes By-Pass Flow (2) Includes H2 in Fuel Loss
(3) Includes Manufacturer's Margin of .5 %

TEST 1 : 22Aug90 : 1050-1305 : 868 MW USING INDIVIDUAL AHs
rb614_0890:jeh

JEH-120690
Appendix 2

			TEST 2 CORRECTED FOR CONTR. CONDITIONS	TEST 2 WITH TEST CONDITIONS
	CONTRACT SUMMARY SHEET	CONTRACT	CONTRACT	TEST
Fuel				
Air Temp Ent AH	PRI/SEC F	77/ 64	77/ 64	109/ 88
Air Temp Lvg AH	PRI/SEC F	582/ 647	0/ 0	508/ 665
Air Flow Lvg AH (1)	PRI/SEC MLB/HR	1335/5184	1492/4994	1492/5999
AH Air By-Pass Flow	MLB/HR	497.8	713.4	713.4
Mill Inlet Temp	F	397.2	0.0	318.9
Ave Air Temp Ent AH	F	66.7	67.0	92.1
Gas Temp Lvg Econ	F	736.0	735.0	735.0
Gas Temp Ent AH	PRI/SEC F	736/ 736	719/ 735	719/ 735
Gas Temp Lvg AH (Incl Lkg)	PRI/SEC F	279/ 282	-/-	297/ 293
Gas Temp Lvg AH (Excl Lkg)	PRI/SEC F	313/ 295	321/ 277	341/ 294
Gas Flow Ent AH	PRI/SEC MLB/HR	924/6286	764/6415	764/7451
Ave Gas Temp Lvg AH (Excl Lkg)	F	294.7	282.0	298.0
Excess Air Lvg Econ	%	17.0	17.0	25.6
Excess Air Ent Pri AH	%	---	17.0	21.4
Excess Air Ent Sec AH	%	---	17.0	25.7
Excess Air Lvg Sec AH	%	---	---	26.4
Excess Air Lvg Pri AH	%	---	---	52.9
Excess Air to Burners	%	15.0	15.0	23.6
Sec AH Leakage	MLB/HR	422	---	39
Pri AH Leakage	MLB/HR	0	---	184
Moisture In Air	LB/LB DA	.0067	.0067	.0041
Dry Gas Wt Lvg Econ	LB/LB Fuel	---	10.007	12.071
Dry Air Wt to Burners	LB/LB Fuel	---	9.478	11.499
Wet Gas Wt Lvg Econ	LB/LB Fuel	---	10.562	12.662
Losses	%			
Dry Gas		4.84	4.69	4.92
H2O in Fuel	(2) 5.15	.87	.75	
H2 in Fuel		4.27	4.34	
Moisture in Air	.07	.06	.04	
Unburned Combustible	.20	.03	.03	
Radiation	.17	.17	.15	
Unaccounted	(3) 1.00	.50	.50	
Summation of Losses	11.43	10.59	10.73	
Efficiency	%	88.57	89.41	89.27
Unit Output	MKB	6691.5	6691.5	7025.0
Fuel Input	MKB	7555.0	7484.1	7869.4
Fuel Rate	MLB/HR	686.2	679.8	648.8

(1) Includes By-Pass Flow (2) Includes H2 in Fuel Loss
(3) Includes Manufacturer's Margin of .5 %

TEST 2 : 22Aug90 : 1500-1705 : 866 MW USING INDIVIDUAL AHs
rb614_0890: jeh

JEH-120690
Appendix 2

			CONTRACT SUMMARY SHEET	TEST 3 CORRECTED FOR CONTR. CONDITIONS	TEST 3 WITH TEST CONDITIONS
Fuel			CONTRACT	CONTRACT	TEST
Air Temp Ent AH	PRI/SEC	F	77/ 64	77/ 64	94/ 69
Air Temp Lvg AH	PRI/SEC	F	582/ 647	0/ 0	512/ 645
Air Flow Lvg AH (1)	PRI/SEC	MLB/HR	1335/5184	1238/5242	1238/5263
AH Air By-Pass Flow		MLB/HR	497.8	485.4	485.4
Mill Inlet Temp		F	397.2	0.0	349.4
Ave Air Temp Ent AH		F	66.7	66.5	73.8
Gas Temp Lvg Econ		F	736.0	725.4	725.4
Gas Temp Ent AH	PRI/SEC	F	736/ 736	713/ 725	713/ 725
Gas Temp Lvg AH (Incl Lkg)	PRI/SEC	F	279/ 282	-/-	298/ 265
Gas Temp Lvg AH (Excl Lkg)	PRI/SEC	F	313/ 295	337/ 270	347/ 274
Gas Flow Ent AH	PRI/SEC	MLB/HR	924/6286	800/6372	800/6362
Ave Gas Temp Lvg AH (Excl Lkg)		F	294.7	277.6	281.9
Excess Air Lvg Econ		%	17.0	17.0	21.6
Excess Air Ent Pri AH		%	---	17.0	21.5
Excess Air Ent Sec AH		%	---	17.0	21.6
Excess Air Lvg Sec AH		%	---	---	27.4
Excess Air Lvg Pri AH		%	---	---	54.4
Excess Air to Burners		%	15.0	15.0	19.3
Sec AH Leakage		MLB/HR	422	---	279
Pri AH Leakage		MLB/HR	0	---	201
Moisture In Air		LB/LB DA	.0067	.0067	.0051
Dry Gas Wt Lvg Econ		LB/LB Fuel	---	10.008	11.731
Dry Air Wt to Burners		LB/LB Fuel	---	9.479	11.135
Wet Gas Wt Lvg Econ		LB/LB Fuel	---	10.563	12.332
Losses		%			
Dry Gas			4.84	4.61	4.84
H2O in Fuel		(2)	5.15	.87	.74
H2 in Fuel			---	4.26	4.40
Moisture in Air			.07	.06	.04
Unburned Combustible			.20	.02	.02
Radiation			.17	.17	.17
Unaccounted		(3)	1.00	.50	.50
Summation of Losses			11.43	10.49	10.71
Efficiency		\$	88.57	89.51	89.29
Unit Output		MKB	6691.5	6691.5	6273.6
Fuel Input		MKB	7555.0	7475.7	7026.1
Fuel Rate		MLB/HR	686.2	679.0	580.8

(1) Includes By-Pass Flow (2) Includes H2 in Fuel Loss
 (3) Includes Manufacturer's Margin of .5 %

TEST 3 : 22Aug90 : 0555-0720 : 789 MW USING INDIVIDUAL AHs
 rb614_0890:jeh

JEH-120690
 Appendix 2

			CONTRACT SUMMARY SHEET	TEST 2R CORRECTED FOR CONTR. CONDITIONS	TEST 2R WITH TEST CONDITIONS
Fuel			CONTRACT	CONTRACT	TEST
Air Temp Ent AH	PRI/SEC	F	77/ 64	77/ 64	106/ 84
Air Temp Lvg AH	PRI/SEC	F	582/ 647	0/ 0	504/ 658
Air Flow Lvg AH (1)	PRI/SEC	MLB/HR	1335/5184	1469/5010	1469/5954
AH Air By-Pass Flow		MLB/HR	497.8	609.8	609.8
Mill Inlet Temp		F	397.2	0.0	340.1
Ave Air Temp Ent AH		F	66.7	66.9	88.4
Gas Temp Lvg Econ		F	736.0	731.8	731.8
Gas Temp Ent AH	PRI/SEC	F	736/ 736	715/ 732	715/ 732
Gas Temp Lvg AH (Incl Lkg)	PRI/SEC	F	279/ 282	-/-	298/ 281
Gas Temp Lvg AH (Excl Lkg)	PRI/SEC	F	313/ 295	325/ 278	343/ 286
Gas Flow Ent AH	PRI/SEC	MLB/HR	924/6286	856/7171	856/7307
Ave Gas Temp Lvg AH (Excl Lkg)		F	294.7	278.3	291.7
Excess Air Lvg Econ		%	17.0	17.0	21.9
Excess Air Ent Pri AH		%	---	17.0	19.5
Excess Air Ent Sec AH		%	---	17.0	21.9
Excess Air Lvg Sec AH		%	---	---	25.3
Excess Air Lvg Pri AH		%	---	---	51.2
Excess Air to Burners		%	15.0	15.0	19.9
Sec AH Leakage		MLB/HR	422	---	188
Pri AH Leakage		MLB/HR	0	---	210
Moisture In Air	LB/LB DA		.0067	.0067	.0047
Dry Gas Wt Lvg Econ	LB/LB Fuel		---	10.008	11.580
Dry Air Wt to Burners	LB/LB Fuel		---	9.479	11.022
Wet Gas Wt Lvg Econ	LB/LB Fuel		---	10.563	12.178
Losses		%			
Dry Gas			4.84	4.61	4.77
H2O in Fuel		(2)	5.15	.87	.84
H2 in Fuel			---	4.26	4.38
Moisture in Air			.07	.06	.04
Unburned Combustible			.20	.02	.02
Radiation			.17	.17	.15
Unaccounted		(3)	1.00	.50	.50
Summation of Losses			11.43	10.49	10.70
Efficiency		%	88.57	89.51	89.30
Unit Output	MKB		6691.5	6691.5	7094.7
Fuel Input	MKB		7555.0	7475.7	7944.8
Fuel Rate	MLB/HR		686.2	679.0	670.3

(1) Includes By-Pass Flow (2) Includes H2 in Fuel Loss
(3) Includes Manufacturer's Margin of .5 %

TEST 2R : 23Aug90 : 1130-1340 : 873 MW USING INDIVIDUAL AHs
rb614_0890:jeh

JEH-120690
Appendix 2

			CONTRACT SUMMARY SHEET	TEST 5 CORRECTED FOR CONTR. CONDITIONS	TEST 5 WITH TEST CONDITIONS
Fuel			CONTRACT	CONTRACT	TEST
Air Temp Ent AH	PRI/SEC	F	77/ 64	77/ 64	107/ 78
Air Temp Lvg AH	PRI/SEC	F	582/ 647	0/ 0	502/ 598
Air Flow Lvg AH (1)	PRI/SEC	MLB/HR	1335/5184	817/5611	817/3509
AH Air By-Pass Flow		MLB/HR	497.8	420.8	420.8
Mill Inlet Temp		F	397.2	0.0	299.9
Ave Air Temp Ent AH		F	66.7	65.7	83.2
Gas Temp Lvg Econ		F	736.0	666.9	666.9
Gas Temp Ent AH	PRI/SEC	F	736/ 736	653/ 667	653/ 667
Gas Temp Lvg AH (Incl Lkg)	PRI/SEC	F	279/ 282	-/-	293/ 241
Gas Temp Lvg AH (Excl Lkg)	PRI/SEC	F	313/ 295	338/ 240	355/ 250
Gas Flow Ent AH	PRI/SEC	MLB/HR	924/6286	494/6621	494/4254
Ave Gas Temp Lvg AH (Excl Lkg)		F	294.7	247.3	261.1
Excess Air Lvg Econ		%	17.0	17.0	48.1
Excess Air Ent Pri AH		%	---	17.0	46.0
Excess Air Ent Sec AH		%	---	17.0	48.1
Excess Air Lvg Sec AH		%	---	---	57.2
Excess Air Lvg Pri AH		%	---	---	99.9
Excess Air to Burners		%	15.0	15.0	44.0
Sec AH Leakage		MLB/HR	422	---	247
Pri AH Leakage		MLB/HR	0	---	171
Moisture In Air		LB/LB DA	.0067	.0067	.0046
Dry Gas Wt Lvg Econ		LB/LB Fuel	---	10.008	13.992
Dry Air Wt to Burners		LB/LB Fuel	---	9.479	13.204
Wet Gas Wt Lvg Econ		LB/LB Fuel	---	10.563	14.558
Losses		%			
Dry Gas			4.84	3.96	4.91
H2O in Fuel		(2)	5.15	.86	.71
H2 in Fuel			---	4.21	3.97
Moisture in Air			.07	.05	.04
Unburned Combustible			.20	.02	.02
Radiation			.17	.17	.30
Unaccounted		(3)	1.00	.50	.50
Summation of Losses			11.43	9.77	10.45
Efficiency		%	88.57	90.23	89.55
Unit Output		MKB	6691.5	6691.5	3550.1
Fuel Input		MKB	7555.0	7416.0	3964.4
Fuel Rate		MLB/HR	686.2	673.6	326.1

(1) Includes By-Pass Flow (2) Includes H2 in Fuel Loss
(3) Includes Manufacturer's Margin of .5 %

TEST 5 : 24Aug90 : 0040-0250 : 442 MW USING INDIVIDUAL AHs
rb614_0890:jeh

JEH-120690
Appendix 2

			TEST 6 CORRECTED FOR CONTR. CONDITIONS	TEST 6 WITH TEST CONDITIONS
	CONTRACT SUMMARY SHEET	CONTRACT	CONTRACT	TEST
Fuel				
Air Temp Ent AH	PRI/SEC F	77/ 64	77/ 64	100/ 74
Air Temp Lvg AH	PRI/SEC F	582/ 647	0/ 0	506/ 614
Air Flow Lvg AH (1)	PRI/SEC MLB/HR	1335/5184	1041/5412	1041/4100
AH Air By-Pass Flow	MLB/HR	497.8	520.5	520.5
Mill Inlet Temp	F	397.2	0.0	304.5
Ave Air Temp Ent AH	F	66.7	66.1	79.1
Gas Temp Lvg Econ	F	736.0	687.4	687.4
Gas Temp Ent AH	PRI/SEC F	736/ 736	675/ 687	675/ 687
Gas Temp Lvg AH (Incl Lkg)	PRI/SEC F	279/ 282	- / -	295/ 253
Gas Temp Lvg AH (Excl Lkg)	PRI/SEC F	313/ 295	338/ 255	351/ 262
Gas Flow Ent AH	PRI/SEC MLB/HR	924/6286	611/6531	611/5042
Ave Gas Temp Lvg AH (Excl Lkg)	F	294.7	262.4	271.8
Excess Air Lvg Econ	%	17.0	17.0	33.9
Excess Air Ent Pri AH	%	---	17.0	32.0
Excess Air Ent Sec AH	%	---	17.0	33.9
Excess Air Lvg Sec AH	%	---	---	41.5
Excess Air Lvg Pri AH	%	---	---	74.1
Excess Air to Burners	%	15.0	15.0	30.8
Sec AH Leakage	MLB/HR	422	---	266
Pri AH Leakage	MLB/HR	0	---	181
Moisture In Air	LB/LB DA	.0067	.0067	.0045
Dry Gas Wt Lvg Econ	LB/LB Fuel	---	10.008	12.822
Dry Air Wt to Burners	LB/LB Fuel	---	9.479	12.111
Wet Gas Wt Lvg Econ	LB/LB Fuel	---	10.563	13.380
Losses	%			
Dry Gas		4.84	4.28	4.88
H2O in Fuel	(2)	5.15	.86	.74
H2 in Fuel		---	4.24	3.96
Moisture in Air		.07	.05	.04
Unburned Combustible		.20	.02	.02
Radiation		.17	.17	.23
Unaccounted	(3)	1.00	.50	.50
Summation of Losses		11.43	10.12	10.37
Efficiency	%	88.57	89.88	89.63
Unit Output	MKB	6691.5	6691.5	4600.4
Fuel Input	MKB	7555.0	7444.9	5132.7
Fuel Rate	MLB/HR	686.2	676.2	422.5

(1) Includes By-Pass Flow (2) Includes H2 in Fuel Loss
 (3) Includes Manufacturer's Margin of .5 %

TEST 6 : 24Aug90 : 0440-0650 : 586 MW USING INDIVIDUAL AHs
 rb614_0890:jeh

JEH-120690
 Appendix 2

	CONTRACT SUMMARY SHEET	TEST 7 CORRECTED FOR CONTR. CONDITIONS	TEST 7 WITH TEST CONDITIONS
Fuel		CONTRACT	TEST
Air Temp Ent AH	PRI/SEC F	77/ 64	104/ 82
Air Temp Lvg AH	PRI/SEC F	582/ 647	510/ 663
Air Flow Lvg AH (1)	PRI/SEC MLB/HR	1335/5184	1671/5124
AH Air By-Pass Flow	MLB/HR	497.8	919.6
Mill Inlet Temp	F	397.2	0.0
Ave Air Temp Ent AH	F	66.7	67.4
Gas Temp Lvg Econ	F	736.0	733.6
Gas Temp Ent AH	PRI/SEC F	736/ 736	718/ 734
Gas Temp Lvg AH (Incl Lkg)	PRI/SEC F	279/ 282	-/-
Gas Temp Lvg AH (Excl Lkg)	PRI/SEC F	313/ 295	336/ 257
Gas Flow Ent AH	PRI/SEC MLB/HR	924/6286	778/6367
Ave Gas Temp Lvg AH (Excl Lkg)	F	294.7	265.3
Excess Air Lvg Econ	%	17.0	17.6
Excess Air Ent Pri AH	%	---	17.0
Excess Air Ent Sec AH	%	---	17.0
Excess Air Lvg Sec AH	%	---	24.5
Excess Air Lvg Pri AH	%	---	56.0
Excess Air to Burners	%	15.0	15.6
Sec AH Leakage	MLB/HR	422	---
Pri AH Leakage	MLB/HR	0	---
Moisture In Air	LB/LB DA	.0067	.0067
Dry Gas Wt Lvg Econ	LB/LB Fuel	---	10.005
Dry Air Wt to Burners	LB/LB Fuel	---	9.477
Wet Gas Wt Lvg Econ	LB/LB Fuel	---	10.561
Losses	%		
Dry Gas		4.84	4.32
H2O in Fuel	(2)	5.15	.86
H2 in Fuel		---	4.24
Moisture in Air		.07	.05
Unburned Combustible		.20	.04
Radiation		.17	.17
Unaccounted	(3)	1.00	.50
Summation of Losses		11.43	10.18
Efficiency	%	88.57	89.82
Unit Output	MKB	6691.5	7049.6
Fuel Input	MKB	7555.0	7787.9
Fuel Rate	MLB/HR	686.2	644.0

(1) Includes By-Pass Flow (2) Includes H2 in Fuel Loss

(3) Includes Manufacturer's Margin of .5 %

TEST 7 : 27Aug90 : 0910-1115 : 873 MW USING INDIVIDUAL AHs
rb614_0890:jeh

JEH-120690
Appendix 2

		CONTRACT SUMMARY SHEET	TEST 8 CORRECTED FOR CONTR. CONDITIONS	TEST 8 WITH TEST CONDITIONS
Fuel				
Air Temp Ent AH	PRI/SEC F	77/ 64	77/ 64	112/ 90
Air Temp Lvg AH	PRI/SEC F	582/ 647	0/ 0	507/ 673
Air Flow Lvg AH (1)	PRI/SEC MLB/HR	1335/5184	1672/4819	1672/5372
AH Air By-Pass Flow	MLB/HR	497.8	888.0	888.0
Mill Inlet Temp	F	397.2	0.0	298.7
Ave Air Temp Ent AH	F	66.7	67.3	95.0
Gas Temp Lvg Econ	F	736.0	742.1	742.1
Gas Temp Ent AH	PRI/SEC F	736/ 736	724/ 742	724/ 742
Gas Temp Lvg AH (Incl Lkg)	PRI/SEC F	279/ 282	-/-	296/ 292
Gas Temp Lvg AH (Excl Lkg)	PRI/SEC F	313/ 295	317/ 281	339/ 299
Gas Flow Ent AH	PRI/SEC MLB/HR	924/6286	751/6433	751/7014
Ave Gas Temp Lvg AH (Excl Lkg)	F	294.7	285.1	302.8
Excess Air Lvg Econ	%	17.0	17.0	17.7
Excess Air Ent Pri AH	%	---	17.0	17.2
Excess Air Ent Sec AH	%	---	17.0	17.7
Excess Air Lvg Sec AH	%	---	---	21.9
Excess Air Lvg Pri AH	%	---	---	48.2
Excess Air to Burners	%	15.0	15.0	15.6
Sec AH Leakage	MLB/HR	422	---	231
Pri AH Leakage	MLB/HR	0	---	183
Moisture In Air	LB/LB DA	.0067	.0067	.0045
Dry Gas Wt Lvg Econ	LB/LB Fuel	---	10.007	11.441
Dry Air Wt to Burners	LB/LB Fuel	---	9.478	10.855
Wet Gas Wt Lvg Econ	LB/LB Fuel	---	10.562	12.021
Losses	%			
Dry Gas		4.84	4.75	4.66
H2O in Fuel	(2)	5.15	.87	.68
H2 in Fuel		---	4.27	4.24
Moisture in Air		.07	.06	.04
Unburned Combustible		.20	.03	.03
Radiation		.17	.17	.15
Unaccounted	(3)	1.00	.50	.50
Summation of Losses		11.43	10.65	10.30
Efficiency	%	88.57	89.35	89.70
Unit Output	MKB	6691.5	6691.5	7089.6
Fuel Input	MKB	7555.0	7489.1	7903.7
Fuel Rate	MLB/HR	686.2	680.2	645.9

(1) Includes By-Pass Flow (2) Includes H2 in Fuel Loss

(3) Includes Manufacturer's Margin of .5 %

TEST 8 : 27Aug90 : 1330-1530 : 868 MW USING INDIVIDUAL AHs
rb614_0890:jeh

JEH-120690
Appendix 2

			TEST 9 CORRECTED FOR CONTR. SHEET	TEST 9 WITH TEST CONDITIONS
Fuel			CONTRACT	CONTRACT
Air Temp Ent AH	PRI/SEC	F	77/ 64	77/ 64
Air Temp Lvg AH	PRI/SEC	F	582/ 647	0/ 0
Air Flow Lvg AH (1)	PRI/SEC	MLB/HR	1335/5184	1429/5058
AH Air By-Pass Flow		MLB/HR	497.8	632.2
Mill Inlet Temp		F	397.2	0.0
Ave Air Temp Ent AH		F	66.7	66.9
Gas Temp Lvg Econ		F	736.0	730.1
Gas Temp Ent AH	PRI/SEC	F	736/ 736	716/ 730
Gas Temp Lvg AH (Incl Lkg)	PRI/SEC	F	279/ 282	-/-
Gas Temp Lvg AH (Excl Lkg)	PRI/SEC	F	313/ 295	328/ 276
Gas Flow Ent AH	PRI/SEC	MLB/HR	924/6286	808/6372
Ave Gas Temp Lvg AH (Excl Lkg)		F	294.7	282.1
Excess Air Lvg Econ		%	17.0	17.0
Excess Air Ent Pri AH		%	---	17.0
Excess Air Ent Sec AH		%	---	17.0
Excess Air Lvg Sec AH		%	---	---
Excess Air Lvg Pri AH		%	---	---
Excess Air to Burners		%	15.0	15.0
Sec AH Leakage		MLB/HR	422	---
Pri AH Leakage		MLB/HR	0	---
Moisture In Air		LB/LB DA	.0067	.0067
Dry Gas Wt Lvg Econ		LB/LB Fuel	---	10.007
Dry Air Wt to Burners		LB/LB Fuel	---	9.478
Wet Gas Wt Lvg Econ		LB/LB Fuel	---	10.562
Losses		%		
Dry Gas			4.84	4.70
H2O in Fuel		(2)	5.15	.87
H2 in Fuel			---	4.27
Moisture in Air			.07	.06
Unburned Combustible			.20	.03
Radiation			.17	.17
Unaccounted		(3)	1.00	.50
Summation of Losses			11.43	10.60
Efficiency		%	88.57	89.40
Unit Output		MKB	6691.5	6691.5
Fuel Input		MKB	7555.0	7484.9
Fuel Rate		MLB/HR	686.2	679.8

(1) Includes By-Pass Flow (2) Includes H2 in Fuel Loss
 (3) Includes Manufacturer's Margin of .5 %

TEST 9 : 28Aug90 : 0930-1130 : 870 MW USING INDIVIDUAL AHs
 rb614_0890:jeh

JEH-120690
 Appendix 2

			CONTRACT SUMMARY SHEET	TEST 10 CORRECTED FOR CONTR. CONDITIONS	TEST 10 WITH TEST CONDITIONS
Fuel			CONTRACT	CONTRACT	TEST
Air Temp Ent AH	PRI/SEC	F	77/ 64	77/ 64	114/ 92
Air Temp Lvg AH	PRI/SEC	F	582/ 647	0/ 0	507/ 670
Air Flow Lvg AH (1)	PRI/SEC	MLB/HR	1335/5184	1634/4869	1634/5410
AH Air By-Pass Flow		MLB/HR	497.8	810.6	810.6
Mill Inlet Temp		F	397.2	0.0	313.4
Ave Air Temp Ent AH		F	66.7	67.3	96.9
Gas Temp Lvg Econ		F	736.0	735.5	735.5
Gas Temp Ent AH	PRI/SEC	F	736/ 736	721/ 735	721/ 735
Gas Temp Lvg AH (Incl Lkg)	PRI/SEC	F	279/ 282	-/-	299/ 302
Gas Temp Lvg AH (Excl Lkg)	PRI/SEC	F	313/ 295	319/ 289	342/ 307
Gas Flow Ent AH	PRI/SEC	MLB/HR	924/6286	796/6402	796/6974
Ave Gas Temp Lvg AH (Excl Lkg)		F	294.7	292.2	311.0
Excess Air Lvg Econ		%	17.0	17.0	16.9
Excess Air Ent Pri AH		%	---	17.0	17.8
Excess Air Ent Sec AH		%	---	17.0	16.9
Excess Air Lvg Sec AH		%	---	---	20.2
Excess Air Lvg Pri AH		%	---	---	49.1
Excess Air to Burners		%	15.0	15.0	14.9
Sec AH Leakage		MLB/HR	422	---	180
Pri AH Leakage		MLB/HR	0	---	195
Moisture In Air	LB/LB	DA	.0067	.0067	.0035
Dry Gas Wt Lvg Econ	LB/LB	Fuel	---	10.007	11.415
Dry Air Wt to Burners	LB/LB	Fuel	---	9.478	10.850
Wet Gas Wt Lvg Econ	LB/LB	Fuel	---	10.562	12.011
Losses		%			
Dry Gas			4.84	4.91	4.82
H2O in Fuel		(2)	5.15	.87	.75
H2 in Fuel			---	4.28	4.46
Moisture in Air			.07	.06	.03
Unburned Combustible			.20	.03	.03
Radiation			.17	.17	.15
Unaccounted		(3)	1.00	.50	.50
Summation of Losses			11.43	10.82	10.74
Efficiency		%	88.57	89.18	89.26
Unit Output	MKB		6691.5	6691.5	7019.3
Fuel Input	MKB		7555.0	7503.4	7863.9
Fuel Rate	MLB/HR		686.2	681.5	646.9

(1) Includes By-Pass Flow (2) Includes H2 in Fuel Loss
 (3) Includes Manufacturer's Margin of .5 %

TEST 10 : 28Aug90 : 1330-1540 : 867 MW USING INDIVIDUAL AHs
 rb614_0890:jeh

JEH-120690
 Appendix 2

		CONTRACT SUMMARY SHEET	TEST 11 CORRECTED FOR CONTR. CONDITIONS	TEST 11 WITH TEST CONDITIONS
Fuel				
Air Temp Ent AH	PRI/SEC	F	77/ 64	77/ 64
Air Temp Lvg AH	PRI/SEC	F	582/ 647	0/ 0
Air Flow Lvg AH (1)	PRI/SEC	MLB/HR	1335/5184	1450/5050
AH Air By-Pass Flow		MLB/HR	497.8	654.9
Mill Inlet Temp		F	397.2	0.0
Ave Air Temp Ent AH		F	66.7	66.9
Gas Temp Lvg Econ		F	736.0	737.6
Gas Temp Ent AH	PRI/SEC	F	736/ 736	725/ 738
Gas Temp Lvg AH (Incl Lkg)	PRI/SEC	F	279/ 282	-/-
Gas Temp Lvg AH (Excl Lkg)	PRI/SEC	F	313/ 295	314/ 287
Gas Flow Ent AH	PRI/SEC	MLB/HR	924/6286	747/6447
Ave Gas Temp Lvg AH (Excl Lkg)		F	294.7	290.1
Excess Air Lvg Econ		%	17.0	17.0
Excess Air Ent Pri AH		%	---	17.0
Excess Air Ent Sec AH		%	---	17.0
Excess Air Lvg Sec AH		%	---	17.0
Excess Air Lvg Pri AH		%	---	---
Excess Air to Burners		%	15.0	15.0
Sec AH Leakage		MLB/HR	422	---
Pri AH Leakage		MLB/HR	0	---
Moisture In Air	LB/LB	DA	.0067	.0067
Dry Gas Wt Lvg Econ	LB/LB	Fuel	---	10.007
Dry Air Wt to Burners	LB/LB	Fuel	---	9.478
Wet Gas Wt Lvg Econ	LB/LB	Fuel	---	10.562
Losses		%		
Dry Gas			4.84	4.87
H2O in Fuel		(2)	5.15	.87
H2 in Fuel			---	.75
Moisture in Air			.07	4.28
Unburned Combustible			.20	.06
Radiation			.17	.02
Unaccounted		(3)	1.00	.03
Summation of Losses			11.43	.15
Efficiency		%	88.57	.50
				.50
Unit Output	MKB		6691.5	10.78
Fuel Input	MKB		7555.0	10.81
Fuel Rate	MLB/HR		686.2	6946.6
				7788.5
				638.6

(1) Includes By-Pass Flow (2) Includes H2 in Fuel Loss
(3) Includes Manufacturer's Margin of .5 %

TEST 11 : 28Aug90 : 1655-1900 : 867 MW USING INDIVIDUAL AHs
rb614_0890:jeh

JEH-120690
Appendix 2

IP7_038500

TEST NO 1

DATE 22Aug90

TIME START 1050

TIME END 1305

USING MEASURED FW FLOW
 USING DATA CHOICE 1

DRUM, SAT FLUID	P = 2651.7 PSIG	T = 677.7 F	H = 753.0 BTU/LB
DRUM, SAT VAPOR	P = 2651.7 PSIG	T = 677.7 F	H = 1074.0 BTU/LB
DRUM, BLOWDOWN	P = 2651.7 PSIG	T = 677.7 F	H = 753.0 BTU/LB
SH SPRAY	P = 2801.7 PSIG	T = 318.2 F	H = 293.4 BTU/LB
ENT SEC.	P = 2537.1 PSIG	T = 776.7 F	H = 1276.3 BTU/LB
LVG PRI-2	P = 2537.1 PSIG	T = 777.2 F	H = 1276.9 BTU/LB
ENT PRI-2	P = 2573.3 PSIG	T = 717.9 F	H = 1195.8 BTU/LB
LVG PRI-1	P = 2573.3 PSIG	T = 720.6 F	H = 1200.2 BTU/LB
ENT ECON	P = 2701.7 PSIG	T = 549.5 F	H = 545.9 BTU/LB
LVG SEC SH	P = 2404.4 PSIG	T = 996.2 F	H = 1457.7 BTU/LB
ENT RH-1 ATTEMP	P = 556.8 PSIG	T = 618.3 F	H = 1304.5 BTU/LB
ENT RH-1	P = 556.8 PSIG	T = 618.0 F	H = 1304.3 BTU/LB
LVG RH-1	P = 522.2 PSIG	T = 999.8 F	H = 1519.1 BTU/LB
NO. 1 HTR FW ENT	P = 2701.7 PSIG	T = 478.6 F	H = 463.3 BTU/LB
NO. 1 HTR FW LVG	P = 2701.7 PSIG	T = 551.4 F	H = 548.2 BTU/LB
NO. 1 HTR DRAIN	P = 1044.8 PSIG	T = 487.1 F	H = 472.6 BTU/LB
NO. 1 HTR EXTR	P = 1044.8 PSIG	T = 788.2 F	H = 1379.4 BTU/LB
NO. 2 HTR FW ENT	P = 2701.7 PSIG	T = 395.6 F	H = 373.4 BTU/LB
NO. 2 HTR FW LVG	P = 2701.7 PSIG	T = 478.6 F	H = 463.3 BTU/LB
NO. 2 HTR DRAIN	P = 548.8 PSIG	T = 404.0 F	H = 379.7 BTU/LB
NO. 2 HTR EXTR	P = 548.8 PSIG	T = 618.0 F	H = 1305.0 BTU/LB
RH-1 SPRAY	P = 756.8 PSIG	T = 106.8 F	H = 76.8 BTU/LB
CORR ENT RH-1	P = 556.8 PSIG	T = 600.7 F	H = 1293.3 BTU/LB
1st STAGE SPRAY	MEASURED 31.3	CALCULATED 31.1	USED C
2nd STAGE SPRAY	MEASURED 28.0	CALCULATED 4.2	USED C
RH-1 SPRAY	MEASURED 48.2	CALCULATED .8	USED M

FLows	MLB/HR	HEAT ABSORPTION	MKB/HR
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STEAM LVG SEC SH	= 6463.0	BOILER	= 3394.4
STEAM LVG PRI-2 SH	= 6458.8	BLOWDOWN HEAT	= 0.0
STEAM LVG PRI-1 SH	= 6427.7	EXTRACTION HEAT	= 0.0
FEEDWATER TO ECON	= 6427.7	SUPERHEATER	= 2507.8
BLOWDOWN	= 0.0	REHEATER 1	= 1193.8
SH EXTRACTION	= 0.0	REHEATER 2	= 0.0
STEAM LVG RH-1	= 5287.0	TOTAL OUTPUT	= 7096.1
STEAM ENT RH-1 ATTEMP	= 5238.8		
NO. 1 HTR. EXTR. FLOW	= 601.7		
NO. 2 HTR. EXTR. FLOW	= 564.3		
TURB LKG	= 58.3		

RB-614

28 Nov 1990

10:09:34

TEST NO 2

DATE 22Aug90

TIME START 1500

TIME END 1705

USING MEASURED FW FLOW
 USING DATA CHOICE 1

DRUM, SAT FLUID	P = 2648.8 PSIG	T = 677.5 F	H = 752.6 BTU/LB
DRUM, SAT VAPOR	P = 2648.8 PSIG	T = 677.5 F	H = 1074.3 BTU/LB
DRUM, BLOWDOWN	P = 2648.8 PSIG	T = 677.5 F	H = 752.6 BTU/LB
SH SPRAY	P = 2798.8 PSIG	T = 305.2 F	H = 280.1 BTU/LB
ENT SEC.	P = 2533.8 PSIG	T = 778.6 F	H = 1278.6 BTU/LB
LVG PRI-2	P = 2533.8 PSIG	T = 778.6 F	H = 1278.5 BTU/LB
ENT PRI-2	P = 2570.1 PSIG	T = 718.0 F	H = 1196.5 BTU/LB
LVG PRI-1	P = 2570.1 PSIG	T = 720.0 F	H = 1199.6 BTU/LB
CORR LVG PRI-2	P = 2533.8 PSIG	T = 778.6 F	H = 1278.6 BTU/LB
CORR ENT SEC	P = 2533.8 PSIG	T = 778.6 F	H = 1278.6 BTU/LB
ENT ECON	P = 2698.8 PSIG	T = 549.3 F	H = 545.6 BTU/LB
LVG SEC SH	P = 2400.6 PSIG	T = 998.2 F	H = 1459.2 BTU/LB
ENT RH-1 ATTEMP	P = 555.5 PSIG	T = 620.2 F	H = 1305.8 BTU/LB
ENT RH-1	P = 555.5 PSIG	T = 619.5 F	H = 1305.4 BTU/LB
LVG RH-1	P = 520.7 PSIG	T = 1000.1 F	H = 1519.3 BTU/LB
NO. 1 HTR FW ENT	P = 2698.8 PSIG	T = 477.8 F	H = 462.4 BTU/LB
NO. 1 HTR FW LVG	P = 2698.8 PSIG	T = 550.4 F	H = 547.0 BTU/LB
NO. 1 HTR DRAIN	P = 1044.8 PSIG	T = 486.3 F	H = 471.8 BTU/LB
NO. 1 HTR EXTR	P = 1044.8 PSIG	T = 771.2 F	H = 1368.8 BTU/LB
NO. 2 HTR FW ENT	P = 2698.8 PSIG	T = 394.7 F	H = 372.6 BTU/LB
NO. 2 HTR FW LVG	P = 2698.8 PSIG	T = 477.8 F	H = 462.4 BTU/LB
NO. 2 HTR DRAIN	P = 547.9 PSIG	T = 402.9 F	H = 378.6 BTU/LB
NO. 2 HTR EXTR	P = 547.9 PSIG	T = 620.0 F	H = 1306.3 BTU/LB
RH-1 SPRAY	P = 755.5 PSIG	T = 106.8 F	H = 76.8 BTU/LB
CORR ENT RH-1	P = 555.5 PSIG	T = 607.5 F	H = 1297.8 BTU/LB
1st STAGE SPRAY	MEASURED 30.2	CALCULATED 21.9	USED C
2nd STAGE SPRAY	MEASURED 26.0	CALCULATED 0.0	USED C
RH-1 SPRAY	MEASURED 34.3	CALCULATED 1.9	USED M

FLOWS	MLB/HR	HEAT ABSORPTION	MKB/HR
STEAM LVG SEC SH	= 6414.1	BOILER	= 3379.5
STEAM LVG PRI-2 SH	= 6414.1	BLOWDOWN HEAT	= 0.0
STEAM LVG PRI-1 SH	= 6392.2	EXTRACTION HEAT	= 0.0
FEEDWATER TO ECON	= 6392.2	SUPERHEATER	= 2485.9
BLOWDOWN	= 0.0	REHEATER 1	= 1158.6
SH EXTRACTION	= 0.0	REHEATER 2	= 0.0
STEAM LVG RH-1	= 5229.2	TOTAL OUTPUT	= 7024.0
STEAM ENT RH-1 ATTEMP	= 5195.0		
NO. 1 HTR. EXTR. FLOW	= 602.5		
NO. 2 HTR. EXTR. FLOW	= 558.8		
TURB LKG	= 57.8		

rb614_0890: jeh

Appendix 3

TEST NO 3

DATE 22Aug90

TIME START 0555

TIME END 0720

USING MEASURED FW FLOW
USING DATA CHOICE 1

DRUM, SAT FLUID	P = 2589.0 PSIG	T = 674.1 F	H = 744.9 BTU/LB
DRUM, SAT VAPOR	P = 2589.0 PSIG	T = 674.1 F	H = 1081.6 BTU/LB
DRUM, BLOWDOWN	P = 2589.0 PSIG	T = 674.1 F	H = 744.9 BTU/LB
SH SPRAY	P = 2739.0 PSIG	T = 332.6 F	H = 308.0 BTU/LB
ENT SEC.	P = 2502.7 PSIG	T = 769.1 F	H = 1270.9 BTU/LB
LVG PRI-2	P = 2502.7 PSIG	T = 795.3 F	H = 1297.7 BTU/LB
ENT PRI-2	P = 2529.9 PSIG	T = 721.8 F	H = 1207.7 BTU/LB
LVG PRI-1	P = 2529.9 PSIG	T = 722.6 F	H = 1208.8 BTU/LB
ENT ECON	P = 2639.0 PSIG	T = 537.5 F	H = 531.4 BTU/LB
LVG SEC SH	P = 2402.7 PSIG	T = 1005.9 F	H = 1464.3 BTU/LB
ENT RH-1 ATTEMP	P = 494.2 PSIG	T = 606.6 F	H = 1302.4 BTU/LB
ENT RH-1	P = 494.2 PSIG	T = 606.4 F	H = 1302.3 BTU/LB
LVG RH-1	P = 462.7 PSIG	T = 1004.9 F	H = 1523.6 BTU/LB
NO. 1 HTR FW ENT	P = 2639.0 PSIG	T = 467.7 F	H = 451.2 BTU/LB
NO. 1 HTR FW LVG	P = 2639.0 PSIG	T = 539.0 F	H = 533.1 BTU/LB
NO. 1 HTR DRAIN	P = 923.6 PSIG	T = 475.0 F	H = 458.7 BTU/LB
NO. 1 HTR EXTR	P = 923.6 PSIG	T = 772.8 F	H = 1376.2 BTU/LB
NO. 2 HTR FW ENT	P = 2639.0 PSIG	T = 386.6 F	H = 363.8 BTU/LB
NO. 2 HTR FW LVG	P = 2639.0 PSIG	T = 467.7 F	H = 451.2 BTU/LB
NO. 2 HTR DRAIN	P = 487.7 PSIG	T = 393.7 F	H = 368.6 BTU/LB
NO. 2 HTR EXTR	P = 487.7 PSIG	T = 605.6 F	H = 1302.3 BTU/LB
RH-1 SPRAY	P = 694.2 PSIG	T = 104.6 F	H = 74.5 BTU/LB
CORR ENT RH-1	P = 494.2 PSIG	T = 598.0 F	H = 1297.1 BTU/LB
1st STAGE SPRAY	MEASURED 24.4	CALCULATED 7.0	USED C
2nd STAGE SPRAY	MEASURED 143.4	CALCULATED 150.7	USED C
RH-1 SPRAY	MEASURED 20.1	CALCULATED .5	USED M

FLOWS MLB/HR

HEAT ABSORPTION MKB/HR

STEAM LGV SEC SH	=	5571.4	BOILER	=	2978.4
STEAM LGV PRI-2 SH	=	5420.7	BLOWDOWN HEAT	=	0.0
STEAM LGV PRI-1 SH	=	5413.7	EXTRACTION HEAT	=	0.0
FEEDWATER TO ECON	=	5413.7	SUPERHEATER	=	2254.2
BLOWDOWN	=	0.0	REHEATER 1	=	1041.4
SH EXTRACTION	=	0.0	REHEATER 2	=	0.0
STEAM LGV RH-1	=	4597.6	TOTAL OUTPUT	=	6274.0
STEAM ENT RH-1 ATTEMP	=	4577.5			
NO. 1 HTR. EXTR. FLOW	=	483.7			
NO. 2 HTR. EXTR. FLOW	=	459.6			
TURB LKG	=	50.5			

rb614 0890: jeh

Appendix 3

TEST NO 2R DATE 23Aug90 TIME START 1130 TIME END 1340

USING MEASURED FW FLOW
 USING DATA CHOICE 1

DRUM, SAT FLUID	P = 2646.2 PSIG	T = 677.4 F	H = 752.2 BTU/LB
DRUM, SAT VAPOR	P = 2646.2 PSIG	T = 677.4 F	H = 1074.7 BTU/LB
DRUM, BLOWDOWN	P = 2646.2 PSIG	T = 677.4 F	H = 752.2 BTU/LB
SH SPRAY	P = 2796.2 PSIG	T = 339.9 F	H = 315.6 BTU/LB
ENT SEC.	P = 2531.9 PSIG	T = 781.9 F	H = 1282.2 BTU/LB
LVG PRI-2	P = 2531.9 PSIG	T = 783.7 F	H = 1284.0 BTU/LB
ENT PRI-2	P = 2568.0 PSIG	T = 722.6 F	H = 1204.1 BTU/LB
LVG PRI-1	P = 2568.0 PSIG	T = 727.4 F	H = 1211.6 BTU/LB
ENT ECON	P = 2696.2 PSIG	T = 549.9 F	H = 546.4 BTU/LB
LVG SEC SH	P = 2399.5 PSIG	T = 1004.0 F	H = 1463.1 BTU/LB
ENT RH-1 ATTEMP	P = 557.1 PSIG	T = 626.9 F	H = 1309.9 BTU/LB
ENT RH-1	P = 557.1 PSIG	T = 625.4 F	H = 1309.0 BTU/LB
LVG RH-1	P = 522.5 PSIG	T = 1010.6 F	H = 1525.0 BTU/LB
NO. 1 HTR FW ENT	P = 2696.2 PSIG	T = 479.0 F	H = 463.8 BTU/LB
NO. 1 HTR FW LVG	P = 2696.2 PSIG	T = 551.1 F	H = 547.9 BTU/LB
NO. 1 HTR DRAIN	P = 1047.1 PSIG	T = 487.1 F	H = 472.7 BTU/LB
NO. 1 HTR EXTR	P = 1047.1 PSIG	T = 797.2 F	H = 1384.9 BTU/LB
NO. 2 HTR FW ENT	P = 2696.2 PSIG	T = 396.2 F	H = 374.0 BTU/LB
NO. 2 HTR FW LVG	P = 2696.2 PSIG	T = 479.0 F	H = 463.8 BTU/LB
NO. 2 HTR DRAIN	P = 549.7 PSIG	T = 403.6 F	H = 379.3 BTU/LB
NO. 2 HTR EXTR	P = 549.7 PSIG	T = 625.6 F	H = 1309.7 BTU/LB
RH-1 SPRAY	P = 757.1 PSIG	T = 101.1 F	H = 71.1 BTU/LB
CORR ENT RH-1	P = 557.1 PSIG	T = 611.0 F	H = 1299.9 BTU/LB
1st STAGE SPRAY	MEASURED 32.2	CALCULATED 53.0	USED C
2nd STAGE SPRAY	MEASURED 29.2	CALCULATED 12.3	USED C
RH-1 SPRAY	MEASURED 42.6	CALCULATED 3.9	USED M

FLOWS MLB/HR HEAT ABSORPTION MKB/HR

STEAM LVG SEC SH	= 6428.5	BOILER	= 3361.5
STEAM LVG PRI-2 SH	= 6416.1	BLOWDOWN HEAT	= 0.0
STEAM LVG PRI-1 SH	= 6363.1	EXTRACTION HEAT	= 0.0
FEEDWATER TO ECON	= 6363.1	SUPERHEATER	= 2546.7
BLOWDOWN	= 0.0	REHEATER 1	= 1186.6
SH EXTRACTION	= 0.0	REHEATER 2	= 0.0
STEAM LVG RH-1	= 5271.7	TOTAL OUTPUT	= 709..9
STEAM ENT RH-1 ATTEMP	= 5229.1		
NO. 1 HTR. EXTR. FLOW	= 586.5		
NO. 2 HTR. EXTR. FLOW	= 554.9		
TURB LKG	= 57.9		

TEST NO 5 DATE 24Aug90 TIME START 0040 TIME END 0250

USING MEASURED FW FLOW
USING DATA CHOICE 1

DRUM, SAT FLUID	P = 1881.9 PSIG	T = 628.3 F	H = 660.0 BTU/LB
DRUM, SAT VAPOR	P = 1881.9 PSIG	T = 628.3 F	H = 1145.8 BTU/LB
DRUM, BLOWDOWN	P = 1881.9 PSIG	T = 628.3 F	H = 660.0 BTU/LB
SH SPRAY	P = 2031.9 PSIG	T = 289.6 F	H = 262.8 BTU/LB
ENT SEC.	P = 1852.6 PSIG	T = 736.4 F	H = 1290.4 BTU/LB
LVG PRI-2	P = 1852.6 PSIG	T = 795.7 F	H = 1339.9 BTU/LB
ENT PRI-2	P = 1861.9 PSIG	T = 683.7 F	H = 1235.1 BTU/LB
LVG PRI-1	P = 1861.9 PSIG	T = 704.2 F	H = 1258.1 BTU/LB
ENT ECON	P = 1931.9 PSIG	T = 475.5 F	H = 459.6 BTU/LB
LVG SEC SH	P = 1818.7 PSIG	T = 1005.1 F	H = 1482.7 BTU/LB
ENT RH-1 ATTEMP	P = 269.3 PSIG	T = 575.0 F	H = 1302.7 BTU/LB
ENT RH-1	P = 269.3 PSIG	T = 573.8 F	H = 1302.0 BTU/LB
LVG RH-1	P = 252.3 PSIG	T = 994.9 F	H = 1524.4 BTU/LB
NO. 1 HTR FW ENT	P = 1931.9 PSIG	T = 413.1 F	H = 391.1 BTU/LB
NO. 1 HTR FW LVG	P = 1931.9 PSIG	T = 477.6 F	H = 461.9 BTU/LB
NO. 1 HTR DRAIN	P = 505.5 PSIG	T = 416.3 F	H = 393.0 BTU/LB
NO. 1 HTR EXTR	P = 505.5 PSIG	T = 727.6 F	H = 1372.1 BTU/LB
NO. 2 HTR FW ENT	P = 1931.9 PSIG	T = 342.7 F	H = 317.1 BTU/LB
NO. 2 HTR FW LVG	P = 1931.9 PSIG	T = 413.1 F	H = 391.1 BTU/LB
NO. 2 HTR DRAIN	P = 266.1 PSIG	T = 346.8 F	H = 318.6 BTU/LB
NO. 2 HTR EXTR	P = 266.1 PSIG	T = 572.6 F	H = 1301.6 BTU/LB
RH-1 SPRAY	P = 469.3 PSIG	T = 103.2 F	H = 72.5 BTU/LB
1st STAGE SPRAY	MEASURED 56.5	CALCULATED 62.4	USED C
2nd STAGE SPRAY	MEASURED 139.2	CALCULATED 133.0	USED C
RH-1 SPRAY	MEASURED 0.0	CALCULATED 1.3	USED M

FLows	MLB/HR	Heat Absorption	MKB/HR
STEAM LVG SEC SH	= 2894.7	BOILER	= 1852.5
STEAM LVG PRI-2 SH	= 2761.7	BLOWDOWN HEAT	= 0.0
STEAM LVG PRI-1 SH	= 2699.3	EXTRACTION HEAT	= 0.0
FEEDWATER TO ECON	= 2699.3	SUPERHEATER	= 1147.6
BLOWDOWN	= 0.0	REHEATER 1	= 550.2
SH EXTRACTION	= 0.0	REHEATER 2	= 0.0
STEAM LVG RH-1	= 2481.4	TOTAL OUTPUT	= 3550.2
STEAM ENT RH-1 ATTEMP	= 2481.4		
NO. 1 HTR. EXTR. FLOW	= 195.3		
NO. 2 HTR. EXTR. FLOW	= 188.5		
TURB LKG	= 29.5		

TEST NO 6 DATE 24Aug90 TIME START 0440 TIME END 0650

USING MEASURED FW FLOW
USING DATA CHOICE 1

DRUM, SAT FLUID	P = 2486.8 PSIG	T = 668.2 F	H = 731.9 BTU/LB
DRUM, SAT VAPOR	P = 2486.8 PSIG	T = 668.2 F	H = 1093.1 BTU/LB
DRUM, BLOWDOWN	P = 2486.8 PSIG	T = 668.2 F	H = 731.9 BTU/LB
SH SPRAY	P = 2636.8 PSIG	T = 311.1 F	H = 285.9 BTU/LB
ENT SEC.	P = 2447.1 PSIG	T = 757.5 F	H = 1262.7 BTU/LB
LVG PRI-2	P = 2447.1 PSIG	T = 782.5 F	H = 1289.1 BTU/LB
ENT PRI-2	P = 2459.7 PSIG	T = 709.6 F	H = 1197.1 BTU/LB
LVG PRI-1	P = 2459.7 PSIG	T = 708.8 F	H = 1195.9 BTU/LB
CORR LVG PRI-1	P = 2459.7 PSIG	T = 709.2 F	H = 1196.5 BTU/LB
CORR ENT PRI-2	P = 2459.7 PSIG	T = 709.2 F	H = 1196.5 BTU/LB
ENT ECON	P = 2536.8 PSIG	T = 502.3 F	H = 490.1 BTU/LB
LVG SEC SH	P = 2401.2 PSIG	T = 1006.3 F	H = 1464.6 BTU/LB
ENT RH-1 ATTEMP	P = 357.5 PSIG	T = 563.3 F	H = 1288.2 BTU/LB
ENT RH-1	P = 357.5 PSIG	T = 561.8 F	H = 1287.3 BTU/LB
LVG RH-1	P = 335.4 PSIG	T = 1001.9 F	H = 1525.7 BTU/LB
NO. 1 HTR FW ENT	P = 2536.8 PSIG	T = 436.8 F	H = 417.3 BTU/LB
NO. 1 HTR FW LVG	P = 2536.8 PSIG	T = 504.1 F	H = 492.2 BTU/LB
NO. 1 HTR DRAIN	P = 664.2 PSIG	T = 441.4 F	H = 420.8 BTU/LB
NO. 1 HTR EXTR	P = 664.2 PSIG	T = 714.8 F	H = 1355.8 BTU/LB
NO. 2 HTR FW ENT	P = 2536.8 PSIG	T = 363.3 F	H = 339.3 BTU/LB
NO. 2 HTR FW LVG	P = 2536.8 PSIG	T = 436.8 F	H = 417.3 BTU/LB
NO. 2 HTR DRAIN	P = 353.4 PSIG	T = 367.1 F	H = 340.1 BTU/LB
NO. 2 HTR EXTR	P = 353.4 PSIG	T = 561.2 F	H = 1287.4 BTU/LB
RH-1 SPRAY	P = 557.5 PSIG	T = 103.2 F	H = 72.7 BTU/LB
1st STAGE SPRAY	MEASURED 23.1	CALCULATED 0.0	USED C
2nd STAGE SPRAY	MEASURED 104.1	CALCULATED 103.0	USED C
RH-1 SPRAY	MEASURED 0.0	CALCULATED 2.4	USED M

FLows	MLB/HR	HEAT ABSORPTION	MKB/HR
STEAM LVG SEC SH	= 3901.7	BOILER	= 2290.6
STEAM LVG PRI-2 SH	= 3798.7	BLOWDOWN HEAT	= 0.0
STEAM LVG PRI-1 SH	= 3798.7	EXTRACTION HEAT	= 0.0
FEEDWATER TO ECON	= 3798.7	SUPERHEATER	= 1532.4
BLOWDOWN	= 0.0	REHEATER 1	= 777.4
SH EXTRACTION	= 0.0	REHEATER 2	= 0.0
STEAM LVG RH-1	= 3273.4	TOTAL OUTPUT	= 4600.3
STEAM ENT RH-1 ATTEMP	= 3273.4		
NO. 1 HTR. EXTR. FLOW	= 304.5		
NO. 2 HTR. EXTR. FLOW	= 286.5		
TURB LKG	= 37.2		

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28 Nov 1990

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TEST NO 7

DATE 27Aug90

TIME START 0910

TIME END 1115

USING MEASURED FW FLOW
 USING DATA CHOICE 1

DRUM, SAT FLUID	P = 2653.2 PSIG	T = 677.7 F	H = 753.1 BTU/LB
DRUM, SAT VAPOR	P = 2653.2 PSIG	T = 677.7 F	H = 1073.8 BTU/LB
DRUM, BLOWDOWN	P = 2653.2 PSIG	T = 677.7 F	H = 753.1 BTU/LB
SH SPRAY	P = 2803.2 PSIG	T = 342.7 F	H = 318.5 BTU/LB
ENT SEC.	P = 2538.7 PSIG	T = 776.1 F	H = 1275.5 BTU/LB
LVG PRI-2	P = 2538.7 PSIG	T = 793.1 F	H = 1293.0 BTU/LB
ENT PRI-2	P = 2574.8 PSIG	T = 723.8 F	H = 1205.1 BTU/LB
LVG PRI-1	P = 2574.8 PSIG	T = 724.4 F	H = 1206.2 BTU/LB
ENT ECON	P = 2703.2 PSIG	T = 550.7 F	H = 547.4 BTU/LB
LVG SEC SH	P = 2406.1 PSIG	T = 1005.7 F	H = 1464.0 BTU/LB
ENT RH-1 ATTEMP	P = 558.3 PSIG	T = 629.3 F	H = 1311.3 BTU/LB
ENT RH-1	P = 558.3 PSIG	T = 626.7 F	H = 1309.7 BTU/LB
LVG RH-1	P = 523.3 PSIG	T = 1004.6 F	H = 1521.7 BTU/LB
NO. 1 HTR FW ENT	P = 2703.2 PSIG	T = 479.3 F	H = 464.1 BTU/LB
NO. 1 HTR FW LVG	P = 2703.2 PSIG	T = 552.4 F	H = 549.4 BTU/LB
NO. 1 HTR DRAIN	P = 1050.5 PSIG	T = 487.3 F	H = 472.9 BTU/LB
NO. 1 HTR EXTR	P = 1050.5 PSIG	T = 800.9 F	H = 1387.0 BTU/LB
NO. 2 HTR FW ENT	P = 2703.2 PSIG	T = 395.9 F	H = 373.7 BTU/LB
NO. 2 HTR FW LVG	P = 2703.2 PSIG	T = 479.3 F	H = 464.1 BTU/LB
NO. 2 HTR DRAIN	P = 550.9 PSIG	T = 404.0 F	H = 379.8 BTU/LB
NO. 2 HTR EXTR	P = 550.9 PSIG	T = 625.9 F	H = 1309.8 BTU/LB
RH-1 SPRAY	P = 758.3 PSIG	T = 229.2 F	H = 199.1 BTU/LB
CORR ENT RH-1	P = 558.3 PSIG	T = 613.0 F	H = 1301.0 BTU/LB
1st STAGE SPRAY	MEASURED 29.8	CALCULATED 7.3	USED C
2nd STAGE SPRAY	MEASURED 113.5	CALCULATED 115.0	USED C
RH-1 SPRAY	MEASURED 48.4	CALCULATED 7.6	USED M

FLOWS	MLB/HR	HEAT ABSORPTION	MKB/HR
STEAM LVG SEC SH	= 6397.4	BOILER	= 3303.5
STEAM LVG PRI-2 SH	= 6282.5	BLOWDOWN HEAT	= 0.0
STEAM LVG PRI-1 SH	= 6275.2	EXTRACTION HEAT	= 0.0
FEEDWATER TO ECON	= 6275.2	SUPERHEATER	= 2588.8
BLOWDOWN	= 0.0	REHEATER 1	= 1158.7
SH EXTRACTION	= 0.0	REHEATER 2	= 0.0
STEAM LVG RH-1	= 5251.5	TOTAL OUTPUT	= 7051.0
STEAM ENT RH-1 ATTEMP	= 5203.1		
NO. 1 HTR. EXTR. FLOW	= 585.4		
NO. 2 HTR. EXTR. FLOW	= 551.3		
TURB LKG	= 57.7		

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Appendix 3

TEST NO 8 DATE 27Aug90 TIME START 1330 TIME END 1535

USING MEASURED FW FLOW
 USING DATA CHOICE 1

DRUM, SAT FLUID	P = 2650.8 PSIG	T = 677.6 F	H = 752.8 BTU/LB
DRUM, SAT VAPOR	P = 2650.8 PSIG	T = 677.6 F	H = 1074.1 BTU/LB
DRUM, BLOWDOWN	P = 2650.8 PSIG	T = 677.6 F	H = 752.8 BTU/LB
SH SPRAY	P = 2800.8 PSIG	T = 342.7 F	H = 318.5 BTU/LB
ENT SEC.	P = 2536.5 PSIG	T = 779.9 F	H = 1279.7 BTU/LB
LVG PRI-2	P = 2536.5 PSIG	T = 787.0 F	H = 1287.1 BTU/LB
ENT PRI-2	P = 2572.6 PSIG	T = 720.4 F	H = 1200.0 BTU/LB
LVG PRI-1	P = 2572.6 PSIG	T = 725.0 F	H = 1207.4 BTU/LB
ENT ECON	P = 2700.8 PSIG	T = 550.2 F	H = 546.7 BTU/LB
LVG SEC SH	P = 2404.1 PSIG	T = 1007.5 F	H = 1465.3 BTU/LB
ENT RH-1 ATTEMP	P = 557.5 PSIG	T = 630.1 F	H = 1311.8 BTU/LB
ENT RH-1	P = 557.5 PSIG	T = 626.7 F	H = 1309.7 BTU/LB
LVG RH-1	P = 522.4 PSIG	T = 1007.8 F	H = 1523.5 BTU/LB
NO. 1 HTR FW ENT	P = 2700.8 PSIG	T = 479.3 F	H = 464.1 BTU/LB
NO. 1 HTR FW LVG	P = 2700.8 PSIG	T = 551.4 F	H = 548.2 BTU/LB
NO. 1 HTR DRAIN	P = 1049.4 PSIG	T = 487.3 F	H = 472.9 BTU/LB
NO. 1 HTR EXTR	P = 1049.4 PSIG	T = 799.8 F	H = 1386.3 BTU/LB
NO. 2 HTR FW ENT	P = 2700.8 PSIG	T = 395.9 F	H = 373.7 BTU/LB
NO. 2 HTR FW LVG	P = 2700.8 PSIG	T = 479.3 F	H = 464.1 BTU/LB
NO. 2 HTR DRAIN	P = 549.9 PSIG	T = 404.0 F	H = 379.8 BTU/LB
NO. 2 HTR EXTR	P = 549.9 PSIG	T = 625.9 F	H = 1309.8 BTU/LB
RH-1 SPRAY	P = 757.5 PSIG	T = 229.2 F	H = 199.1 BTU/LB
CORR ENT RH-1	P = 557.5 PSIG	T = 616.8 F	H = 1303.5 BTU/LB
1st STAGE SPRAY	MEASURED 28.9	CALCULATED 52.4	USED C
2nd STAGE SPRAY	MEASURED 54.7	CALCULATED 49.3	USED C
RH-1 SPRAY	MEASURED 39.6	CALCULATED 9.9	USED M

FLows	MLB/HR	HEAT ABSORPTION	MKB/HR
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STEAM LVG SEC SH	= 6430.5	BOILER	= 3337.5
STEAM LVG PRI-2 SH	= 6381.2	BLOWDOWN HEAT	= 0.0
STEAM LVG PRI-1 SH	= 6328.8	EXTRACTION HEAT	= 0.0
FEEDWATER TO ECON	= 6328.8	SUPERHEATER	= 2592.3
BLOWDOWN	= 0.0	REHEATER 1	= 1159.9
SH EXTRACTION	= 0.0	REHEATER 2	= 0.0
STEAM LVG RH-1	= 5273.0	TOTAL OUTPUT	= 7089.7
STEAM ENT RH-1 ATTEMP	= 5233.4		
NO. 1 HTR. EXTR. FLOW	= 582.3		
NO. 2 HTR. EXTR. FLOW	= 556.8		
TURB LKG	= 58.0		

TEST NO 9

DATE 28Aug90

TIME START 0930

TIME END 1130

USING MEASURED FW FLOW
 USING DATA CHOICE 1

DRUM, SAT FLUID	P = 2642.9 PSIG	T = 677.2 F	H = 751.8 BTU/LB
DRUM, SAT VAPOR	P = 2642.9 PSIG	T = 677.2 F	H = 1075.1 BTU/LB
DRUM, BLOWDOWN	P = 2642.9 PSIG	T = 677.2 F	H = 751.8 BTU/LB
SH SPRAY	P = 2792.9 PSIG	T = 334.9 F	H = 310.5 BTU/LB
ENT SEC.	P = 2528.4 PSIG	T = 781.2 F	H = 1281.7 BTU/LB
LVG PRI-2	P = 2528.4 PSIG	T = 784.8 F	H = 1285.4 BTU/LB
ENT PRI-2	P = 2564.6 PSIG	T = 721.4 F	H = 1202.7 BTU/LB
LVG PRI-1	P = 2564.6 PSIG	T = 722.5 F	H = 1204.4 BTU/LB
ENT ECON	P = 2692.9 PSIG	T = 549.8 F	H = 546.3 BTU/LB
LVG SEC SH	P = 2395.9 PSIG	T = 1006.7 F	H = 1465.0 BTU/LB
ENT RH-1 ATTEMP	P = 555.1 PSIG	T = 627.7 F	H = 1310.5 BTU/LB
ENT RH-1	P = 555.1 PSIG	T = 626.3 F	H = 1309.7 BTU/LB
LVG RH-1	P = 520.2 PSIG	T = 1006.9 F	H = 1523.0 BTU/LB
NO. 1 HTR FW ENT	P = 2692.9 PSIG	T = 478.1 F	H = 462.7 BTU/LB
NO. 1 HTR FW LVG	P = 2692.9 PSIG	T = 541.8 F	H = 536.5 BTU/LB
NO. 1 HTR DRAIN	P = 1044.4 PSIG	T = 486.7 F	H = 472.2 BTU/LB
NO. 1 HTR EXTR	P = 1044.4 PSIG	T = 798.4 F	H = 1385.7 BTU/LB
NO. 2 HTR FW ENT	P = 2692.9 PSIG	T = 395.1 F	H = 372.9 BTU/LB
NO. 2 HTR FW LVG	P = 2692.9 PSIG	T = 478.1 F	H = 462.7 BTU/LB
NO. 2 HTR DRAIN	P = 547.5 PSIG	T = 403.7 F	H = 379.4 BTU/LB
NO. 2 HTR EXTR	P = 547.5 PSIG	T = 627.2 F	H = 1310.8 BTU/LB
RH-1 SPRAY	P = 755.1 PSIG	T = 236.3 F	H = 206.3 BTU/LB
CORR ENT RH-1	P = 555.1 PSIG	T = 613.9 F	H = 1301.8 BTU/LB
1st STAGE SPRAY	MEASURED 29.7	CALCULATED 12.5	USED C
2nd STAGE SPRAY	MEASURED 35.2	CALCULATED 24.2	USED C
RH-1 SPRAY	MEASURED 41.6	CALCULATED 4.1	USED M

FLOWS	MLB/HR	HEAT ABSORPTION	MKB/HR
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STEAM LVG SEC SH	= 6363.4	BOILER	= 3345.7
STEAM LVG PRI-2 SH	= 6339.3	BLOWDOWN HEAT	= 0.0
STEAM LVG PRI-1 SH	= 6326.8	EXTRACTION HEAT	= 0.0
FEEDWATER TO ECON	= 6326.8	SUPERHEATER	= 2509.4
BLOWDOWN	= 0.0	REHEATER 1	= 1167.1
SH EXTRACTION	= 0.0	REHEATER 2	= 0.0
STEAM LVG RH-1	= 5277.4	TOTAL OUTPUT	= 7022.3
STEAM ENT RH-1 ATTEMP	= 5235.8		
NO. 1 HTR. EXTR. FLOW	= 510.8		
NO. 2 HTR. EXTR. FLOW	= 559.5		
TURB LKG	= 57.4		

TEST NO 10 DATE 28Aug90 TIME START 1330 TIME END 1540

USING MEASURED FW FLOW

USING DATA CHOICE 1

DRUM, SAT FLUID	P = 2640.1 PSIG	T = 677.0 F	H = 751.5 BTU/LB
DRUM, SAT VAPOR	P = 2640.1 PSIG	T = 677.0 F	H = 1075.4 BTU/LB
DRUM, BLOWDOWN	P = 2640.1 PSIG	T = 677.0 F	H = 751.5 BTU/LB
SH SPRAY	P = 2790.1 PSIG	T = 343.5 F	H = 319.3 BTU/LB
ENT SEC.	P = 2526.1 PSIG	T = 773.8 F	H = 1274.0 BTU/LB
LVG PRI-2	P = 2526.1 PSIG	T = 782.7 F	H = 1283.4 BTU/LB
ENT PRI-2	P = 2562.1 PSIG	T = 718.2 F	H = 1197.8 BTU/LB
LVG PRI-1	P = 2562.1 PSIG	T = 720.5 F	H = 1201.5 BTU/LB
ENT ECON	P = 2690.1 PSIG	T = 549.7 F	H = 546.1 BTU/LB
LVG SEC SH	P = 2394.2 PSIG	T = 1004.9 F	H = 1463.9 BTU/LB
ENT RH-1 ATTEMP	P = 555.2 PSIG	T = 628.1 F	H = 1310.8 BTU/LB
ENT RH-1	P = 555.2 PSIG	T = 626.6 F	H = 1309.9 BTU/LB
LVG RH-1	P = 520.2 PSIG	T = 1007.9 F	H = 1523.6 BTU/LB
NO. 1 HTR FW ENT	P = 2690.1 PSIG	T = 478.1 F	H = 462.7 BTU/LB
NO. 1 HTR FW LVG	P = 2690.1 PSIG	T = 551.5 F	H = 548.4 BTU/LB
NO. 1 HTR DRAIN	P = 1044.3 PSIG	T = 486.7 F	H = 472.2 BTU/LB
NO. 1 HTR EXTR	P = 1044.3 PSIG	T = 799.7 F	H = 1386.6 BTU/LB
NO. 2 HTR FW ENT	P = 2690.1 PSIG	T = 395.5 F	H = 373.3 BTU/LB
NO. 2 HTR FW LVG	P = 2690.1 PSIG	T = 478.1 F	H = 462.7 BTU/LB
NO. 2 HTR DRAIN	P = 547.3 PSIG	T = 403.6 F	H = 379.3 BTU/LB
NO. 2 HTR EXTR	P = 547.3 PSIG	T = 627.3 F	H = 1310.9 BTU/LB
RH-1 SPRAY	P = 755.2 PSIG	T = 233.7 F	H = 203.7 BTU/LB
CORR ENT RH-1	P = 555.2 PSIG	T = 616.1 F	H = 1303.2 BTU/LB
1st STAGE SPRAY	MEASURED 27.9	CALCULATED 26.3	USED C
2nd STAGE SPRAY	MEASURED 52.4	CALCULATED 62.1	USED C
RH-1 SPRAY	MEASURED 35.6	CALCULATED 4.4	USED M

FLOWS MLB/HR HEAT ABSORPTION MKB/HR

STEAM LVG SEC SH	= 6374.1	BOILER	= 3326.9
STEAM LVG PRI-2 SH	= 6312.0	BLOWDOWN HEAT	= 0.0
STEAM LVG PRI-1 SH	= 6285.7	EXTRACTION HEAT	= 0.0
FEEDWATER TO ECON	= 6285.7	SUPERHEATER	= 2542.9
BLOWDOWN	= 0.0	REHEATER 1	= 1149.9
SH EXTRACTION	= 0.0	REHEATER 2	= 0.0
STEAM LVG RH-1	= 5219.2	TOTAL OUTPUT	= 7019.7
STEAM ENT RH-1 ATTEMP	= 5183.5		
NO. 1 HTR. EXTR. FLOW	= 588.7		
NO. 2 HTR. EXTR. FLOW	= 544.4		
TURB LKG	= 57.5		

TEST NO 11 DATE 28Aug90 TIME START 1655 TIME END 1900

USING MEASURED FW FLOW
USING DATA CHOICE 1

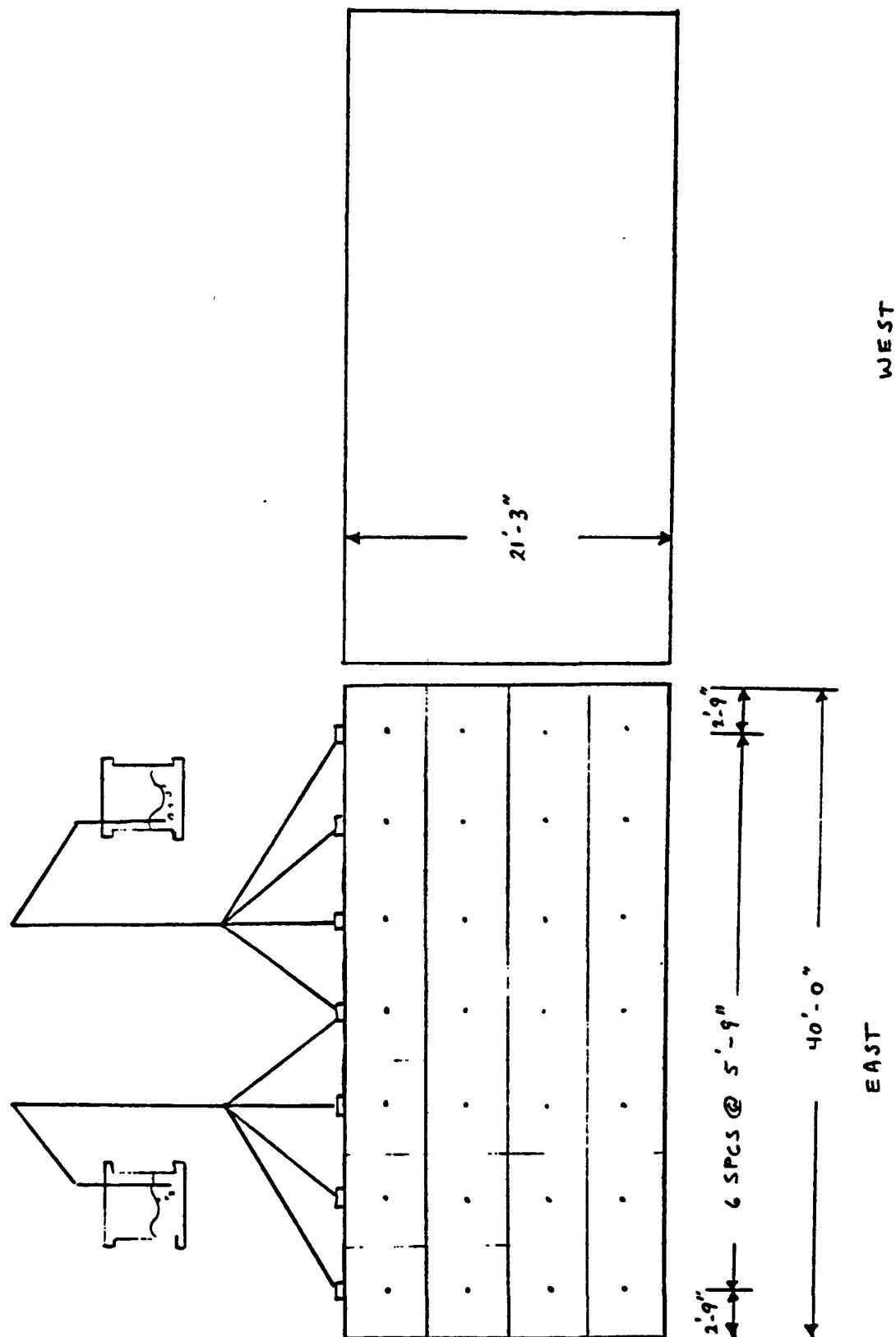
DRUM, SAT FLUID	P - 2639.3 PSIG	T - 677.0 F	H - 751.4 BTU/LB
DRUM, SAT VAPOR	P - 2639.3 PSIG	T - 677.0 F	H - 1075.5 BTU/LB
DRUM, BLOWDOWN	P - 2639.3 PSIG	T - 677.0 F	H - 751.4 BTU/LB
SH SPRAY	P - 2789.3 PSIG	T - 337.5 F	H - 313.1 BTU/LB
ENT SEC.	P - 2525.4 PSIG	T - 776.4 F	H - 1276.9 BTU/LB
LVG PRI-2	P - 2525.4 PSIG	T - 776.4 F	H - 1276.9 BTU/LB
ENT PRI-2	P - 2561.4 PSIG	T - 715.1 F	H - 1192.6 BTU/LB
LVG PRI-1	P - 2561.4 PSIG	T - 716.3 F	H - 1194.7 BTU/LB
CORR LVG PRI-2	P - 2525.4 PSIG	T - 776.4 F	H - 1276.9 BTU/LB
CORR ENT SEC	P - 2525.4 PSIG	T - 776.4 F	H - 1276.9 BTU/LB
ENT ECON	P - 2689.3 PSIG	T - 549.3 F	H - 545.7 BTU/LB
LVG SEC SH	P - 2393.6 PSIG	T - 1003.5 F	H - 1463.0 BTU/LB
ENT RH-1 ATTEMP	P - 554.4 PSIG	T - 626.0 F	H - 1309.5 BTU/LB
ENT RH-1	P - 554.4 PSIG	T - 624.1 F	H - 1308.4 BTU/LB
LVG RH-1	P - 520.1 PSIG	T - 1006.4 F	H - 1522.8 BTU/LB
NO. 1 HTR FW ENT	P - 2689.3 PSIG	T - 478.1 F	H - 462.7 BTU/LB
NO. 1 HTR FW LVG	P - 2689.3 PSIG	T - 550.8 F	H - 547.5 BTU/LB
NO. 1 HTR DRAIN	P - 1043.8 PSIG	T - 486.7 F	H - 472.2 BTU/LB
NO. 1 HTR EXTR	P - 1043.8 PSIG	T - 795.5 F	H - 1384.0 BTU/LB
NO. 2 HTR FW ENT	P - 2689.3 PSIG	T - 395.0 F	H - 372.8 BTU/LB
NO. 2 HTR FW LVG	P - 2689.3 PSIG	T - 478.1 F	H - 462.7 BTU/LB
NO. 2 HTR DRAIN	P - 547.1 PSIG	T - 402.8 F	H - 378.5 BTU/LB
NO. 2 HTR EXTR	P - 547.1 PSIG	T - 624.9 F	H - 1309.4 BTU/LB
RH-1 SPRAY	P - 754.4 PSIG	T - 233.7 F	H - 203.7 BTU/LB
CORR ENT RH-1	P - 554.4 PSIG	T - 618.1 F	H - 1304.6 BTU/LB
1st STAGE SPRAY	MEASURED 25.9	CALCULATED 15.3	USED C
2nd STAGE SPRAY	MEASURED 22.8	CALCULATED 0.0	USED C
RH-1 SPRAY	MEASURED 23.1	CALCULATED 5.5	USED M

FLOWS MLB/HR HEAT ABSORPTION MKB/HR

STEAM LVG SEC SH	= 6339.7	BOILER	= 3351.1
STEAM LVG PRI-2 SH	= 6339.7	BLOWDOWN HEAT	= 0.0
STEAM LVG PRI-1 SH	= 6324.4	EXTRACTION HEAT	= 0.0
FEEDWATER TO ECON	= 6324.4	SUPERHEATER	= 2468.0
BLOWDOWN	= 0.0	REHEATER 1	= 1127.0
SH EXTRACTION	= 0.0	REHEATER 2	= 0.0
STEAM LVG RH-1	= 5165.6	TOTAL OUTPUT	= 6946.1
STEAM ENT RH-1 ATTEMP	= 5142.5		
NO. 1 HTR. EXTR. FLOW	= 588.1		
NO. 2 HTR. EXTR. FLOW	= 551.9		
TURB LKG	= 57.1		

IP7_038512

GENERAL CALCULATIONS



CUSTOMER

INTERMOUNTAIN POWER PROJECT

FILE NO.

RE-614

SUBJECT

ECONOMIZER GAS OUTLET SAMPLING GRID

PREPARED BY

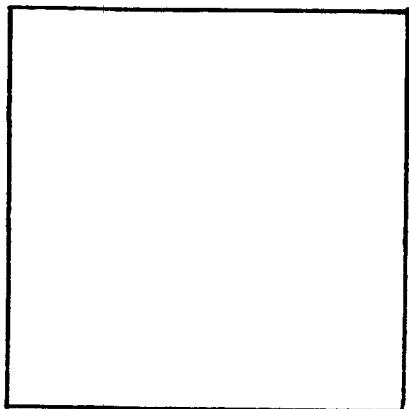
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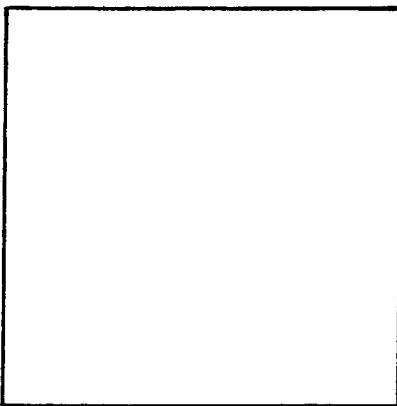
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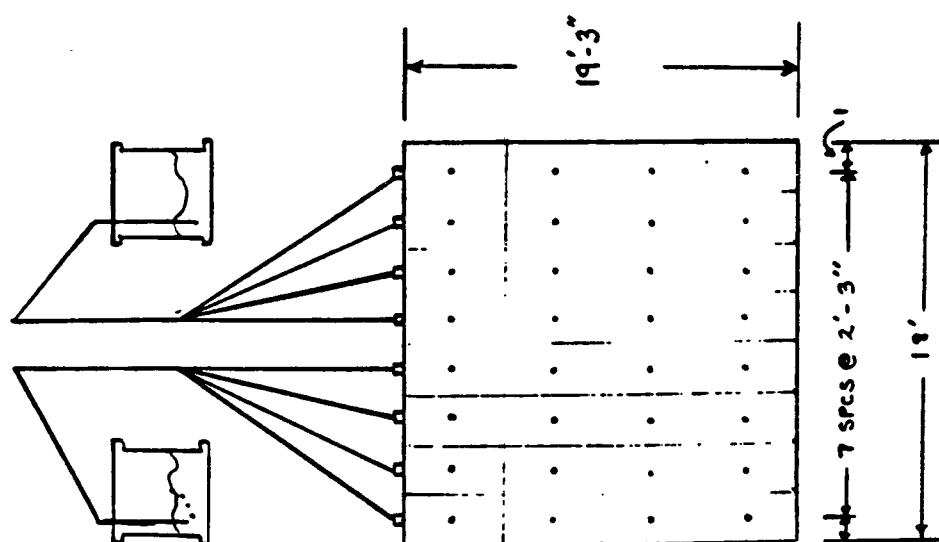
GENERAL CALCULATIONS



WEST



CENTER



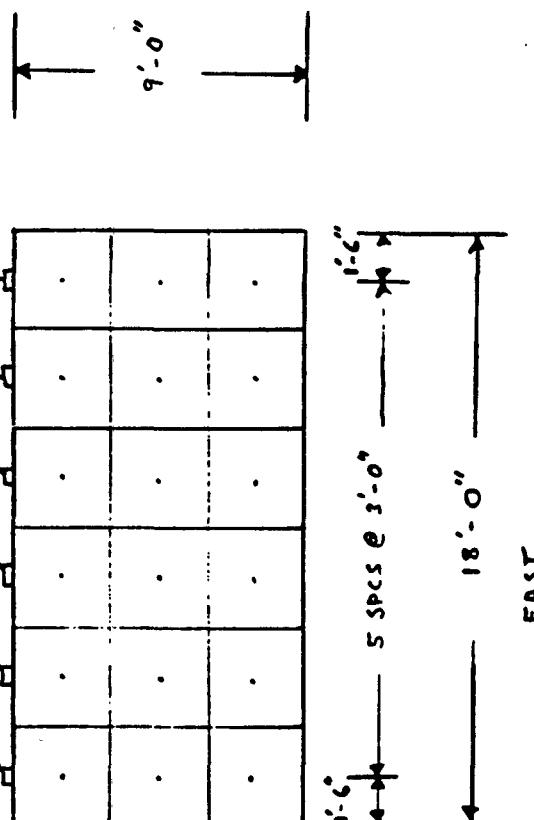
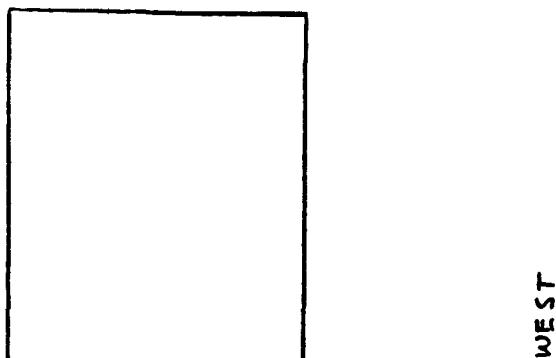
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CUSTOMER INTERMOUNTAIN POWER PROJECT	FILE NO. RB-614
SUBJECT BAGHOUSE INLET GAS SAMPLING GRIDS	PREPARED BY JDR

DATE
5-25-88

IP7_038514

GENERAL CALCULATIONS



STOMER

INTERMOUNTAIN POWER PROJECT

SUBJECT

PRIMARY AIR HEATER GAS INLET SAMPLING GRID

FILE NO.

RB-614

PREPARED BY

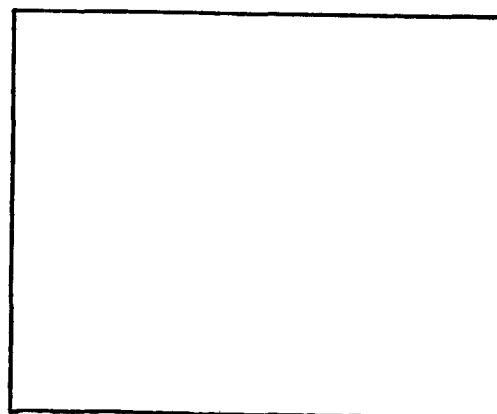
JDR

DATE

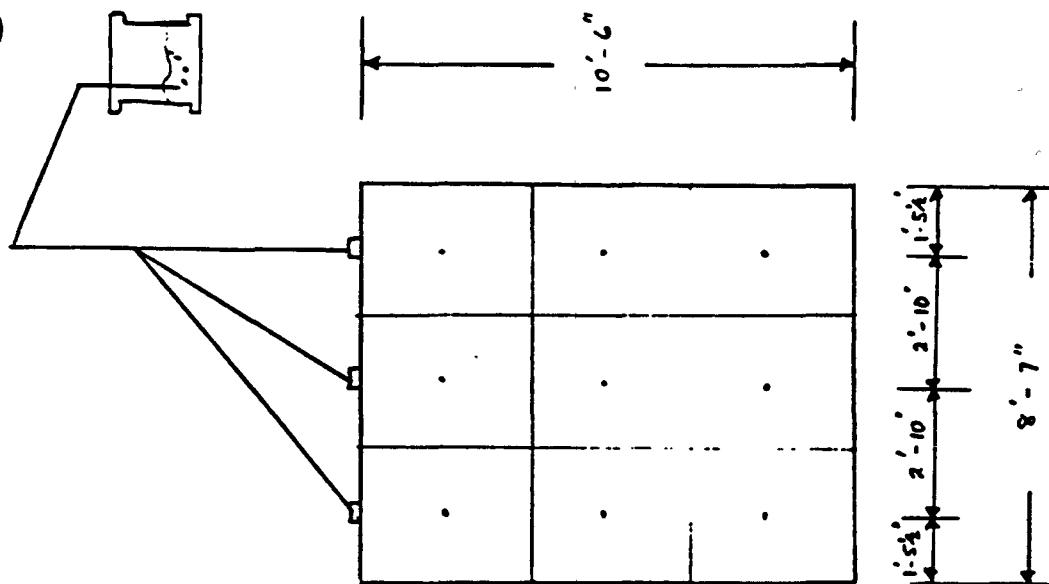
5-25-88

IP7_038515

GENERAL CALCULATIONS



WEST



FOMER INTERMOUNTAIN POWER PROJECT		FILE NO. RB-614
SUBJECT PRIMARY AIR HEATER GAS OUTLET SAMPLING GRID	PREPARED BY JDR	DATE 5-25-88

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IP7_038517

INTERMOUNTAIN POWER SERVICE CORPORATION
FUELS LABORATORY
ULTIMATE ANALYSIS

UNIT 1 BOILER/AIR HEATER TESTING 08/22-28/90

		% TOTAL MOISTURE	% CARBON	% HYDROGEN	% NITROGEN	% ASH	% SULFUR	% BY DIFF OXYGEN	BTU/LB MMV
TEST 9 08/28/90	B	7.71	69.64	4.97	1.36	6.11	0.47	9.74	12,256
	C	9.40	68.19	5.30	1.30	6.19	0.42	9.20	11,965
	D	8.64	68.42	4.89	1.14	6.33	0.42	10.16	12,070
	E	7.81	68.80	4.81	1.22	6.80	0.40	10.16	12,068
	F	7.49	69.59	5.04	1.23	7.22	0.54	8.89	12,135
	G	6.20	69.87	4.79	1.29	7.95	0.51	9.39	12,178
	H	8.10	68.58	4.73	1.11	7.19	0.44	9.85	11,975
	AVE	7.91	69.01	4.93	1.24	6.83	0.46	9.63	12,092
TEST 10 08/28/90	A	7.61	69.71	5.72	1.11	6.88	0.44	8.53	12,152
	B	8.17	69.47	5.63	1.23	6.11	0.40	8.97	12,143
	C	8.92	68.57	5.36	1.16	6.22	0.41	9.36	12,014
	D	7.85	69.36	5.29	1.26	6.35	0.45	9.44	12,183
	E	7.54	70.25	5.14	1.29	5.46	0.41	9.91	12,454
	F	8.18	69.16	5.37	1.18	6.65	0.46	9.00	12,073
	G	8.40	68.86	5.35	1.15	6.27	0.41	9.56	12,110
	H	7.20	69.61	4.83	1.19	7.35	0.47	9.35	12,115
TEST 11 08/28/90	AVE	7.98	69.37	5.34	1.20	6.41	0.43	9.27	12,156
	B	8.58	68.97	5.64	1.06	5.59	0.42	9.84	12,204
	C	7.78	63.97	5.51	1.13	6.46	0.41	9.74	12,129
	D	7.68	69.54	5.42	1.09	5.94	0.42	9.91	12,266
	E	8.89	68.86	5.42	1.15	5.65	0.42	9.61	12,134
	F	7.44	69.66	5.53	1.14	6.58	0.42	9.23	12,157
	G	8.57	69.11	5.68	1.30	5.37	0.41	9.56	12,236
	H	7.87	69.43	5.47	1.16	5.82	0.41	9.84	12,265
	AVE	8.12	69.21	5.52	1.15	5.92	0.42	9.68	12,196

FLY ASH	TEST 9 % DRY CARBON		FLY ASH	TEST 10 % DRY CARBON		FLY ASH	TEST 11 % DRY CARBON	
	ECON ASH	BTM ASH		ECON ASH	BTM ASH		ECON ASH	BTM ASH
0.38	0.08	0.11	0.38	0.08	0.11	0.38	0.08	0.11
0.74			0.74			0.74		
0.42			0.42			0.42		
0.44			0.44			0.44		
AVE	0.50	0.08	0.11	0.50	0.08	0.11	0.50	0.08

0.46 = % TOTAL DRY CARBON 0.46 = % TOTAL DRY CARBON 0.46 = % TOTAL DRY CARBON

IP7_038518

INTERMOUNTAIN POWER SERVICE CORPORATION
FUELS LABORATORY
ULTIMATE ANALYSIS

UNIT 1 BOILER/AIR HEATER TESTING 08/22-28/90

TEST 5 08/24/90	FLY	% TOTAL <u>MOISTURE</u>	% CARBON	% HYDROGEN	% NITROGEN	% ASH	% SULFUR	% BY DIFF OXYGEN	BTU/L HHV
	A	6.57	68.75	4.91	1.23	7.61	0.59	10.34	12,25
	B	6.82	68.74	4.71	1.12	6.76	0.57	11.28	12,33
	C	10.06	66.91	4.47	1.20	7.24	0.49	9.63	11,73
	D	7.11	70.67	5.08	1.50	6.60	0.57	8.47	12,30

	AVE	7.64	68.77	4.79	1.26	7.05	0.56	9.93	12,157

TEST 6 08/24/90	FLY	7.32	70.63	4.72	1.41	6.22	0.48	9.22	12,336
	A	8.39	68.17	4.53	1.18	7.43	0.45	9.85	11,906
	B	10.67	66.65	4.53	1.23	6.79	0.40	9.73	11,668
	C	7.22	70.39	4.80	1.37	6.70	0.50	9.02	12,301
	D	6.08	71.60	5.14	1.29	6.62	0.60	8.67	12,530

	AVE	7.94	69.49	4.74	1.30	6.75	0.49	9.30	12,148

TEST 1			TEST 2			
% DRY CARBON			% DRY CARBON			
FLY ASH	ECON ASH	BTM ASH	FLY ASH	ECON ASH	BTM ASH	
0.16	0.02	0.27	0.23	0.02	0.27	
0.30			0.19			
0.35			0.24			
AVE	0.26	0.02	0.27	0.22	0.02	
	0.26	= % TOTAL DRY CARBON		0.22	= % TOTAL DRY CARBON	

IP7_038519

INTERMOUNTAIN POWER SERVICE CORPORATION
FUELS LABORATORY
ULTIMATE ANALYSIS

UNIT 1 BOILER/AIR HEATER TESTING 08/22-28/90

	FUEL	% TOTAL MOISTURE	% CARBON	% HYDROGEN	% NITROGEN	% ASH	% SULFUR	% BY DIFF OXYGEN	BTU/L MMV
		A	B	C	D	E	F	G	H
TEST 7 08/27/90	A	7.92	68.60	4.33	1.26	6.51	0.48	10.90	12,16
	B	7.12	68.86	4.29	1.22	7.70	0.47	10.34	12,11
	C	8.15	68.86	5.02	1.75	6.79	0.53	8.90	12,09
	D	6.59	69.81	4.41	1.53	7.14	0.50	10.02	12,31
	E	7.14	69.28	4.87	1.13	7.37	0.50	9.71	12,15
	F	7.48	68.87	4.81	1.29	7.36	0.51	9.68	12,11
	G	9.56	68.89	4.40	1.28	7.51	0.43	9.93	11,69
	AVE	7.71	68.74	4.59	1.35	7.20	0.49	9.93	12,093

TEST 8 08/27/90	A	6.22	68.81	5.32	1.26	5.97	0.39	10.03	12,155
	B	6.59	70.34	5.05	1.21	6.26	0.46	9.79	12,401
	C	8.53	68.73	5.19	1.38	6.02	0.46	9.69	12,151
	D	7.70	69.37	4.81	1.25	6.62	0.47	9.78	12,161
	E	7.41	69.91	4.96	1.37	6.13	0.47	9.75	12,297
	F	6.64	69.47	4.85	1.46	7.31	0.62	9.65	12,231
	G	5.82	70.52	5.68	1.38	8.03	0.55	8.02	12,258
	AVE	7.32	69.59	5.12	1.33	6.62	0.49	9.53	12,236

	TEST 1			TEST 2		
	% DRY CARBON			% DRY CARBON		
	FLY ASH	ECON ASH	BTM ASH	FLY ASH	ECON ASH	BTM ASH
	0.46	0.13	0.26	0.46	0.13	0.26
	0.46	0.13	0.26	0.46	0.13	0.26
AVE	0.46	0.13	0.26	0.46	0.13	0.26
	0.46	= % TOTAL DRY CARBON		0.46	= % TOTAL DRY CARBON	

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**INTERMOUNTAIN POWER SERVICE CORPORATION
FUELS LABORATORY
ULTIMATE ANALYSIS**

UNIT 1 BOILER/AIR HEATER TESTING 08/22-28/90

		% TOTAL MOISTURE	% CARBON	% HYDROGEN	% NITROGEN	% ASH	% SULFUR	% BY DIFF OXYGEN	BTU/L MMV
TEST 1 08/22/90	A	8.57	68.75	4.63	1.22	6.43	0.46	9.94	12,11
	B	8.60	68.71	5.03	1.23	6.63	0.46	9.34	12,06
	C	9.08	67.82	4.97	1.28	6.63	0.51	9.71	11,94
	D	7.52	68.57	4.89	1.85	7.23	0.46	9.48	12,13
	F	8.02	68.40	4.62	1.33	7.11	0.48	10.24	12,05
	G	6.90	69.34	5.36	1.33	7.11	0.51	9.45	12,24
	H	8.23	68.07	4.83	1.28	7.12	0.44	10.03	12,03
	AVE	8.13	68.52	4.88	1.36	6.89	0.47	9.76	12,086
TEST 2 08/22/90	A	6.39	70.55	5.22	1.39	6.73	0.51	9.21	12,41
	B	8.05	68.88	5.27	1.20	6.79	0.50	9.31	12,11
	C	8.20	68.16	5.52	1.32	6.88	0.49	9.43	12,054
	D	9.27	67.60	5.07	1.04	6.66	0.41	9.95	11,915
	F	8.19	68.81	5.15	1.12	6.53	0.44	9.76	12,076
	G	7.55	69.51	4.96	1.67	6.08	0.46	9.97	12,322
	H	8.23	67.42	5.12	1.35	7.33	0.53	10.02	12,004
	AVE	7.98	68.70	5.19	1.27	6.71	0.48	9.66	12,129

TEST 1			TEST 2		
% DRY CARBON			% DRY CARBON		
FLY ASH	ECON ASH	BTM ASH	FLY ASH	ECON ASH	BTM ASH
0.48	0.21	0.30	0.48	0.21	0.30
0.18			0.18		
0.32			0.32		
AVE	0.33	0.21	0.33	0.21	0.30

0.32 = % TOTAL DRY CARBON

0.32 = % TOTAL DRY CARBON

IP7_038521

INTERMOUNTAIN POWER SERVICE CORPORATION
FUELS LABORATORY
ULTIMATE ANALYSIS

UNIT 1 BOILER/AIR HEATER TESTING 08/22-28/90

TEST 3 08/23/90	FLY	% TOTAL MOISTURE	% CARBON	% HYDROGEN	% NITROGEN	% ASH	% SULFUR	% BY DIFF OXYGEN	STU HI
	A	9.74	66.69	5.27	1.07	7.89	0.34	9.20	11,
	B	9.20	68.00	5.44	1.18	6.31	0.38	9.49	11,
	C								
	D								
	E	7.20	69.66	4.85	1.20	6.70	0.50	9.89	12,
	G	7.03	69.40	4.84	1.21	6.61	0.42	10.49	12,
	H	5.87	71.22	5.62	1.31	6.18	0.42	9.38	12,
	AVE	7.81	68.95	5.20	1.19	6.74	0.41	9.69	12,0
TEST 4 08/23/90	A	8.59	68.06	5.01	1.31	7.57	0.45	9.01	11,8
	B	8.87	68.59	5.45	1.49	6.52	0.40	8.68	12,0
	C	10.04	65.37	4.84	1.14	8.92	0.44	9.25	11,4
	D	8.72	68.86	5.30	1.22	6.20	0.41	9.29	12,0
	F	8.74	67.65	5.16	1.16	7.48	0.36	9.45	11,8
	G	7.24	69.05	5.22	1.35	7.71	0.69	8.74	12,2
	H	8.89	66.77	4.86	1.25	8.63	0.35	9.25	11,5
	AVE	8.73	67.76	5.12	1.27	7.58	0.44	9.10	11,85

TEST 1			TEST 2			
% DRY CARBON			% DRY CARBON			
FLY ASH	ECON ASH	BTM ASH	FLY ASH	ECON ASH	BTM ASH	
0.30	0.08	0.25	0.16	0.08	0.25	
0.34			0.14			
0.18						
AVE	0.27	0.08	0.25	0.15	0.08	
	0.27	= % TOTAL DRY CARBON		0.15	= % TOTAL DRY CARBON	

IP7_038523

			TEST 1 CORRECTED FOR CONTR. SHEET	TEST 1 WITH TEST CONDITIONS
Fuel			CONTRACT	TEST
Air Temp Ent AH	PRI/SEC	F	77/ 64	102/ 81
Air Temp Lvg AH	PRI/SEC	F	582/ 647	514/ 668
Air Flow Lvg AH (1)	PRI/SEC	MLB/HR	1335/5184	1491/5011
AH Air By-Pass Flow		MLB/HR	497.8	738.5
Mill Inlet Temp		F	397.2	0.0
Ave Air Temp Ent AH		F	66.7	67.0
Gas Temp Lvg Econ		F	736.0	739.3
Gas Flow Ent AH		MLB/HR	7210	7197
Ave Gas Temp Lvg AH (Incl Lkg)		F	281.6	---
Ave Gas Temp Lvg AH (Excl Lkg)		F	294.7	291.6
Excess Air Lvg Econ		%	17.0	17.0
Excess Air Lvg AH		%	---	---
Excess Air to Burners		%	15.0	15.0
AH Leakage		MLB/HR	484	---
Moisture In Air		LB/LB DA	.0067	.0067
Dry Gas Wt Lvg Econ		LB/LB Fuel	---	10.007
Dry Air Wt to Burners		LB/LB Fuel	---	9.478
Wet Gas Wt Lvg Econ		LB/LB Fuel	---	10.562
Losses		%		
Dry Gas			4.84	4.90
H2O in Fuel		(2)	5.15	.87
H2 in Fuel			---	4.28
Moisture in Air			.07	.06
Unburned Combustible			.20	.03
Radiation			.17	.17
Unaccounted		(3)	1.00	.50
Summation of Losses			11.43	10.81
Efficiency		%	88.57	89.19
Unit Output		MKB	6691.5	7096.2
Fuel Input		MKB	7555.0	7941.1
Fuel Rate		MLB/HR	686.2	657.1

(1) Includes By-Pass Flow (2) Includes H2 in Fuel Loss
 (3) Includes Manufacturer's Margin of .5 %

TEST 1 : 22Aug90 : 1050-1305 : 868 MW WITH FINAL FUEL ANALYSIS

JEH-120690

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Appendix 6

			TEST 2 CORRECTED FOR CONTR. SHEET	TEST 2 WITH TEST CONDITIONS
Fuel			CONTRACT	TEST
Air Temp Ent AH	PRI/SEC	F	77/ 64	109/ 88
Air Temp Lvg AH	PRI/SEC	F	582/ 647	508/ 665
Air Flow Lvg AH (1)	PRI/SEC	MLB/HR	1335/5184	1492/4993
AH Air By-Pass Flow		MLB/HR	497.8	713.4
Mill Inlet Temp		F	397.2	0.0
Ave Air Temp Ent AH		F	66.7	67.0
Gas Temp Lvg Econ		F	736.0	735.0
Gas Flow Ent AH		MLB/HR	7210	7178
Ave Gas Temp Lvg AH (Incl Lkg)		F	281.6	---
Ave Gas Temp Lvg AH (Excl Lkg)		F	294.7	298.4
Excess Air Lvg Econ		%	17.0	17.0
Excess Air Lvg AH		%	---	---
Excess Air to Burners		%	15.0	15.0
AH Leakage		MLB/HR	484	---
Moisture In Air		LB/LB DA	.0067	.0067
Dry Gas Wt Lvg Econ		LB/LB Fuel	---	10.007
Dry Air Wt to Burners		LB/LB Fuel	---	9.478
Wet Gas Wt Lvg Econ		LB/LB Fuel	---	10.562
Losses		%		
Dry Gas			4.84	4.68
H2O in Fuel		(2)	5.15	.87
H2 in Fuel			---	4.26
Moisture in Air			.07	.06
Unburned Combustible			.20	.03
Radiation			.17	.15
Unaccounted		(3)	1.00	.50
Summation of Losses			11.43	10.57
Efficiency		%	88.57	89.43
Unit Output		MKB	6691.5	7025.0
Fuel Input		MKB	7555.0	7870.3
Fuel Rate		MLB/HR	686.2	648.9

(1) Includes By-Pass Flow (2) Includes H2 in Fuel Loss

(3) Includes Manufacturer's Margin of .5 %

TEST 2 : 22Aug90 : 1500-1705 : 866 MW WITH FINAL FUEL ANALYSIS

JEH-120690

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Appendix 6

	CONTRACT SUMMARY SHEET	TEST 3 CORRECTED FOR CONTR. CONDITIONS	TEST 3 WITH TEST CONDITIONS
Fuel		CONTRACT	TEST
Air Temp Ent AH	PRI/SEC F	77 / 64	94 / 69
Air Temp Lvg AH	PRI/SEC F	582 / 647	0 / 0
Air Flow Lvg AH (1)	PRI/SEC MLB/HR	1335/5184	1238/5241
AH Air By-Pass Flow	MLB/HR	497.8	485.4
Mill Inlet Temp	F	397.2	0.0
Ave Air Temp Ent AH	F	66.7	66.5
			73.8
Gas Temp Lvg Econ	F	736.0	725.4
Gas Flow Ent AH	MLB/HR	7210	7171
Ave Gas Temp Lvg AH (Incl Lkg)	F	281.6	---
Ave Gas Temp Lvg AH (Excl Lkg)	F	294.7	277.1
Excess Air Lvg Econ	%	17.0	17.0
Excess Air Lvg AH	%	---	---
Excess Air to Burners	%	15.0	15.0
AH Leakage	MLB/HR	484	---
Moisture In Air	LB/LB DA	.0067	.0067
Dry Gas Wt Lvg Econ	LB/LB Fuel	---	10.008
Dry Air Wt to Burners	LB/LB Fuel	---	9.479
Wet Gas Wt Lvg Econ	LB/LB Fuel	---	10.563
			12.332
Losses %			
Dry Gas		4.84	4.60
H2O in Fuel	(2)	5.15	.87
H2 in Fuel		---	4.26
Moisture in Air		.07	.06
Unburned Combustible		.20	.02
Radiation		.17	.17
Unaccounted	(3)	1.00	.50
Summation of Losses		11.43	10.48
			10.72
Efficiency %		88.57	89.52
			89.28
Unit Output	MKB	6691.5	6273.6
Fuel Input	MKB	7555.0	7026.9
Fuel Rate	MLB/HR	686.2	580.9

(1) Includes By-Pass Flow (2) Includes H2 in Fuel Loss
 (3) Includes Manufacturer's Margin of .5 %

TEST 3 : 22Aug90 : 0555-0720 : 789 MW USING FINAL FUEL ANALYSIS

JEH-120690

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Appendix 6

			TEST 2R CONTRACT SUMMARY SHEET	CORRECTED FOR CONTR. CONDITIONS	TEST 2R WITH TEST CONDITIONS
Fuel			CONTRACT	CONTRACT	TEST
Air Temp Ent AH	PRI/SEC	F	77/ 64	77/ 64	106/ 84
Air Temp Lvg AH	PRI/SEC	F	582/ 647	0/ 0	504/ 658
Air Flow Lvg AH (1)	PRI/SEC	MLB/HR	1335/5184	1469/5009	1469/5955
AH Air By-Pass Flow		MLB/HR	497.8	609.8	609.8
Mill Inlet Temp		F	397.2	0.0	340.1
Ave Air Temp Ent AH		F	66.7	66.9	88.4
Gas Temp Lvg Econ		F	736.0	731.8	731.8
Gas Flow Ent AH		MLB/HR	7210	7170	8164
Ave Gas Temp Lvg AH (Incl Lkg)		F	281.6	---	283.0
Ave Gas Temp Lvg AH (Excl Lkg)		F	294.7	277.4	292.0
Excess Air Lvg Econ		%	17.0	17.0	21.9
Excess Air Lvg AH		%	---	---	28.3
Excess Air to Burners		%	15.0	15.0	19.9
AH Leakage		MLB/HR	484	---	399
Moisture In Air		LB/LB DA	.0067	.0067	.0047
Dry Gas Wt Lvg Econ		LB/LB Fuel	---	10.008	11.580
Dry Air Wt to Burners		LB/LB Fuel	---	9.479	11.022
Wet Gas Wt Lvg Econ		LB/LB Fuel	---	10.563	12.178
Losses		%			
Dry Gas			4.84	4.59	4.78
H2O in Fuel		(2)	5.15	.87	.84
H2 in Fuel			---	4.26	4.38
Moisture in Air			.07	.06	.04
Unburned Combustible			.20	.02	.02
Radiation			.17	.17	.15
Unaccounted		(3)	1.00	.50	.50
Summation of Losses			11.43	10.47	10.71
Efficiency		%	88.57	89.53	89.29
Unit Output		MKB	6691.5	6691.5	7094.7
Fuel Input		MKB	7555.0	7474.0	7945.7
Fuel Rate		MLB/HR	686.2	678.8	670.4

(1) Includes By-Pass Flow (2) Includes H2 in Fuel Loss
 (3) Includes Manufacturer's Margin of .5 %

TEST 2R : 23Aug90 : 1130-1340 : 873 MW WITH FINAL FUEL ANALYSIS

JEH-120690

rb614_0890:jeh

Appendix 6

			CONTRACT SUMMARY SHEET	TEST 5 CORRECTED FOR CONTR. CONDITIONS	TEST 5 WITH TEST CONDITIONS
Fuel					
Air Temp Ent AH	PRI/SEC	F	77/ 64	77/ 64	107/ 78
Air Temp Lvg AH	PRI/SEC	F	582/ 647	0/ 0	502/ 598
Air Flow Lvg AH (1)	PRI/SEC	MLB/HR	1335/5184	817/5616	817/3510
AH Air By-Pass Flow		MLB/HR	497.8	420.8	420.8
Mill Inlet Temp		F	397.2	0.0	299.9
Ave Air Temp Ent AH		F	66.7	65.7	83.2
Gas Temp Lvg Econ		F	736.0	666.9	666.9
Gas Flow Ent AH		MLB/HR	7210	7120	4749
Ave Gas Temp Lvg AH (Incl Lkg)		F	281.6	---	247.6
Ave Gas Temp Lvg AH (Excl Lkg)		F	294.7	249.3	261.5
Excess Air Lvg Econ		%	17.0	17.0	48.1
Excess Air Lvg AH		%	---	---	62.0
Excess Air to Burners		%	15.0	15.0	44.0
AH Leakage		MLB/HR	484	---	418
Moisture In Air		LB/LB DA	.0067	.0067	.0046
Dry Gas Wt Lvg Econ		LB/LB Fuel	---	10.008	13.992
Dry Air Wt to Burners		LB/LB Fuel	---	9.479	13.204
Wet Gas Wt Lvg Econ		LB/LB Fuel	---	10.563	14.558
Losses		%			
Dry Gas			4.84	4.01	4.93
H2O in Fuel		(2)	5.15	.86	.71
H2 in Fuel			---	4.22	3.97
Moisture in Air			.07	.05	.04
Unburned Combustible			.20	.02	.02
Radiation			.17	.17	.30
Unaccounted		(3)	1.00	.50	.50
Summation of Losses			11.43	9.83	10.47
Efficiency		%	88.57	90.17	89.53
Unit Output		MKB	6691.5	6691.5	3550.1
Fuel Input		MKB	7555.0	7421.0	3965.3
Fuel Rate		MLB/HR	686.2	674.0	326.2

(1) Includes By-Pass Flow (2) Includes H2 in Fuel Loss
 (3) Includes Manufacturer's Margin of .5 %

TEST 5 : 24Aug90 : 0040-0250 : 442 MW WITH FINAL FUEL ANALYSIS

JEH-120690

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Appendix 6

			TEST 6 CORRECTED FOR CONTR. SHEET	TEST 6 WITH TEST CONDITIONS
Fuel			CONTRACT	TEST
Air Temp Ent AH	PRI/SEC	F	77/ 64	100/ 74
Air Temp Lvg AH	PRI/SEC	F	582/ 647	506/ 614
Air Flow Lvg AH (1)	PRI/SEC	MLB/HR	1335/5184	1041/5414
AH Air By-Pass Flow		MLB/HR	497.8	520.5
Mill Inlet Temp		F	397.2	304.5
Ave Air Temp Ent AH		F	66.7	79.1
Gas Temp Lvg Econ		F	736.0	687.4
Gas Flow Ent AH		MLB/HR	7210	5654
Ave Gas Temp Lvg AH (Incl Lkg)		F	281.6	258.5
Ave Gas Temp Lvg AH (Excl Lkg)		F	294.7	272.0
Excess Air Lvg Econ		%	17.0	33.9
Excess Air Lvg AH		%	---	45.3
Excess Air to Burners		%	15.0	30.8
AH Leakage		MLB/HR	484	445
Moisture In Air		LB/LB DA	.0067	.0045
Dry Gas Wt Lvg Econ		LB/LB Fuel	---	12.822
Dry Air Wt to Burners		LB/LB Fuel	---	12.111
Wet Gas Wt Lvg Econ		LB/LB Fuel	---	13.380
Losses		%		
Dry Gas			4.84	4.89
H2O in Fuel		(2)	5.15	.74
H2 in Fuel			---	3.96
Moisture in Air			.07	.04
Unburned Combustible			.20	.02
Radiation			.17	.23
Unaccounted		(3)	1.00	.50
Summation of Losses			11.43	10.38
Efficiency		%	88.57	89.86
Unit Output		MKB	6691.5	4600.4
Fuel Input		MKB	7555.0	5133.2
Fuel Rate		MLB/HR	686.2	422.6

(1) Includes By-Pass Flow (2) Includes H2 in Fuel Loss
 (3) Includes Manufacturer's Margin of .5 %

TEST 6 : 24Aug90 : 0440-0650 : 586 MW WITH FINAL FUEL ANALYSIS

JEH-120690

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Appendix 6

		CONTRACT SUMMARY SHEET	TEST 7 CORRECTED FOR CONTR. CONDITIONS	TEST 7 WITH TEST CONDITIONS
Fuel			CONTRACT	TEST
Air Temp Ent AH	PRI/SEC F	77/ 64	77/ 64	104/ 82
Air Temp Lvg AH	PRI/SEC F	582/ 647	0/ 0	510/ 663
Air Flow Lvg AH (1)	PRI/SEC MLB/HR	1335/5184	1671/4782	1671/5124
AH Air By-Pass Flow	MLB/HR	497.8	919.6	919.6
Mill Inlet Temp	F	397.2	0.0	288.5
Ave Air Temp Ent AH	F	66.7	67.4	87.6
Gas Temp Lvg Econ	F	736.0	733.6	733.6
Gas Flow Ent AH	MLB/HR	7210	7143	7507
Ave Gas Temp Lvg AH (Incl Lkg)	F	281.6	---	264.8
Ave Gas Temp Lvg AH (Excl Lkg)	F	294.7	264.2	278.4
Excess Air Lvg Econ	%	17.0	17.0	17.6
Excess Air Lvg AH	%	---	---	27.7
Excess Air to Burners	%	15.0	15.0	15.6
AH Leakage	MLB/HR	484	---	599
Moisture In Air	LB/LB DA	.0067	.0067	.0046
Dry Gas Wt Lvg Econ	LB/LB Fuel	---	10.005	11.121
Dry Air Wt to Burners	LB/LB Fuel	---	9.477	10.502
Wet Gas Wt Lvg Econ	LB/LB Fuel	---	10.561	11.657
Losses	%			
Dry Gas		4.84	4.29	4.21
H2O in Fuel	(2)	5.15	.86	.72
H2 in Fuel		---	4.23	3.83
Moisture in Air		.07	.05	.03
Unburned Combustible		.20	.04	.04
Radiation		.17	.17	.15
Unaccounted	(3)	1.00	.50	.50
Summation of Losses		11.43	10.14	9.48
Efficiency	%	88.57	89.86	90.52
Unit Output	MKB	6691.5	6691.5	7049.6
Fuel Input	MKB	7555.0	7446.6	7787.9
Fuel Rate	MLB/HR	686.2	676.3	644.0

(1) Includes By-Pass Flow (2) Includes H2 in Fuel Loss
 (3) Includes Manufacturer's Margin of .5 %

TEST 7 : 27Aug90 : 0910-1115 : 873 MW WITH FINAL FUEL ANALYSIS

JEH-120690

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Appendix 6

			CONTRACT SUMMARY SHEET	TEST 8 CORRECTED FOR CONTR. CONDITIONS	TEST 8 WITH TEST CONDITIONS
Fuel					
Air Temp Ent AH	PRI/SEC	F	77/ 64	77/ 64	112/ 90
Air Temp Lvg AH	PRI/SEC	F	582/ 647	0/ 0	507/ 673
Air Flow Lvg AH (1)	PRI/SEC	MLB/HR	1335/5184	1672/4818	1672/5372
AH Air By-Pass Flow		MLB/HR	497.8	888.0	888.0
Mill Inlet Temp		F	397.2	0.0	298.7
Ave Air Temp Ent AH		F	66.7	67.3	95.0
Gas Temp Lvg Econ		F	736.0	742.1	742.1
Gas Flow Ent AH		MLB/HR	7210	7183	7766
Ave Gas Temp Lvg AH (Incl Lkg)		F	281.6	---	292.9
Ave Gas Temp Lvg AH (Excl Lkg)		F	294.7	284.5	303.3
Excess Air Lvg Econ		%	17.0	17.0	17.7
Excess Air Lvg AH		%	---	---	24.5
Excess Air to Burners		%	15.0	15.0	15.6
AH Leakage		MLB/HR	484	---	415
Moisture In Air		LB/LB DA	.0067	.0067	.0045
Dry Gas Wt Lvg Econ		LB/LB Fuel	---	10.007	11.441
Dry Air Wt to Burners		LB/LB Fuel	---	9.478	10.855
Wet Gas Wt Lvg Econ		LB/LB Fuel	---	10.562	12.021
Losses		%			
Dry Gas			4.84	4.74	4.67
H2O in Fuel		(2)	5.15	.87	.68
H2 in Fuel			---	4.27	4.24
Moisture in Air			.07	.06	.04
Unburned Combustible			.20	.03	.03
Radiation			.17	.17	.15
Unaccounted		(3)	1.00	.50	.50
Summation of Losses			11.43	10.64	10.31
Efficiency		%	88.57	89.36	89.69
Unit Output		MKB	6691.5	6691.5	7089.6
Fuel Input		MKB	7555.0	7488.2	7904.6
Fuel Rate		MLB/HR	686.2	680.1	646.0

(1) Includes By-Pass Flow (2) Includes H2 in Fuel Loss
 (3) Includes Manufacturer's Margin of .5 %

TEST 8 : 27Aug90 : 1330-1530 : 868 MW WITH FINAL FUEL ANALYSIS

JEH-120690

rb614_0890:jeh

Appendix 6

			TEST 9 CORRECTED FOR CONTR. CONDITIONS	TEST 9 WITH TEST CONDITIONS
	CONTRACT SUMMARY SHEET			
Fuel			CONTRACT	TEST
Air Temp Ent AH	PRI/SEC	F	77/ 64	103/ 81
Air Temp Lvg AH	PRI/SEC	F	582/ 647	508/ 657
Air Flow Lvg AH (1)	PRI/SEC	MLB/HR	1335/5184	1429/5057
AH Air By-Pass Flow		MLB/HR	497.8	632.2
Mill Inlet Temp		F	397.2	0.0
Ave Air Temp Ent AH		F	66.7	66.9
Gas Temp Lvg Econ		F	736.0	730.1
Gas Flow Ent AH		MLB/HR	7210	7179
Ave Gas Temp Lvg AH (Incl Lkg)		F	281.6	---
Ave Gas Temp Lvg AH (Excl Lkg)		F	294.7	281.3
Excess Air Lvg Econ		%	17.0	17.0
Excess Air Lvg AH		%	---	---
Excess Air to Burners		%	15.0	15.0
AH Leakage		MLB/HR	484	---
Moisture In Air		LB/LB DA	.0067	.0067
Dry Gas Wt Lvg Econ		LB/LB Fuel	---	10.007
Dry Air Wt to Burners		LB/LB Fuel	---	9.478
Wet Gas Wt Lvg Econ		LB/LB Fuel	---	10.562
Losses		%		
Dry Gas			4.84	4.80
H2O in Fuel			(2) 5.15	.75
H2 in Fuel			---	4.15
Moisture in Air			.07	.04
Unburned Combustible			.20	.03
Radiation			.17	.15
Unaccounted			(3) 1.00	.50
Summation of Losses			11.43	10.42
Efficiency		%	88.57	89.42
Unit Output		MKB	6691.5	7022.7
Fuel Input		MKB	7555.0	7839.6
Fuel Rate		MLB/HR	686.2	648.3

(1) Includes By-Pass Flow (2) Includes H2 in Fuel Loss
 (3) Includes Manufacturer's Margin of .5 %

TEST 9 : 28Aug90 : 0930-1130 : 870 MW WITH FINAL FUEL ANALYSIS

JEH-120690

rb614_0890:jeh

Appendix 6

			TEST 10 CORRECTED FOR CONTR. SHEET	TEST 10 WITH TEST CONDITIONS
Fuel			CONTRACT	TEST
Air Temp Ent AH	PRI/SEC	F	77/ 64	114/ 92
Air Temp Lvg AH	PRI/SEC	F	582/ 647	507/ 670
Air Flow Lvg AH (1)	PRI/SEC	MLB/HR	1335/5184	1634/4868
AH Air By-Pass Flow		MLB/HR	497.8	810.6
Mill Inlet Temp		F	397.2	0.0
Ave Air Temp Ent AH		F	66.7	67.3
Gas Temp Lvg Econ		F	736.0	735.5
Gas Flow Ent AH		MLB/HR	7210	7196
Ave Gas Temp Lvg AH (Incl Lkg)		F	281.6	---
Ave Gas Temp Lvg AH (Excl Lkg)		F	294.7	291.5
Excess Air Lvg Econ		%	17.0	17.0
Excess Air Lvg AH		%	---	---
Excess Air to Burners		%	15.0	15.0
AH Leakage		MLB/HR	484	---
Moisture In Air		LB/LB DA	.0067	.0067
Dry Gas Wt Lvg Econ		LB/LB Fuel	---	10.007
Dry Air Wt to Burners		LB/LB Fuel	---	9.478
Wet Gas Wt Lvg Econ		LB/LB Fuel	---	10.562
Losses		%		
Dry Gas			4.84	4.89
H2O in Fuel		(2)	5.15	.87
H2 in Fuel			---	4.28
Moisture in Air			.07	.06
Unburned Combustible			.20	.03
Radiation			.17	.15
Unaccounted		(3)	1.00	.50
Summation of Losses			11.43	10.80
Efficiency		%	88.57	89.20
Unit Output		MKB	6691.5	7019.3
Fuel Input		MKB	7555.0	7864.8
Fuel Rate		MLB/HR	686.2	647.0

(1) Includes By-Pass Flow (2) Includes H2 in Fuel Loss

(3) Includes Manufacturer's Margin of .5 %

TEST 10 : 28Aug90 : 1330-1540 : 867 MW WITH FINAL FUEL ANALYSIS

JEH-120690

rb614_0890:jeh

Appendix 6

			CONTRACT SUMMARY SHEET	TEST 11 CORRECTED FOR CONTR. CONDITIONS	TEST 11 WITH TEST CONDITIONS
Fuel				CONTRACT	TEST
Air Temp Ent AH	PRI/SEC	F	77/ 64	77/ 64	118/ 95
Air Temp Lvg AH	PRI/SEC	F	582/ 647	0/ 0	507/ 666
Air Flow Lvg AH (1)	PRI/SEC	MLB/HR	1335/5184	1450/5049	1450/5556
AH Air By-Pass Flow		MLB/HR	497.8	654.9	654.9
Mill Inlet Temp		F	397.2	0.0	332.7
Ave Air Temp Ent AH		F	66.7	66.9	100.1
Gas Temp Lvg Econ		F	736.0	737.6	737.6
Gas Flow Ent AH		MLB/HR	7210	7194	7728
Ave Gas Temp Lvg AH (Incl Lkg)		F	281.6	---	303.1
Ave Gas Temp Lvg AH (Excl Lkg)		F	294.7	289.5	311.6
Excess Air Lvg Econ		%	17.0	17.0	17.6
Excess Air Lvg AH		%	---	---	23.2
Excess Air to Burners		%	15.0	15.0	15.5
AH Leakage		MLB/HR	484	---	342
Moisture In Air		LB/LB DA	.0067	.0067	.0028
Dry Gas Wt Lvg Econ		LB/LB Fuel	---	10.007	11.494
Dry Air Wt to Burners		LB/LB Fuel	---	9.478	10.939
Wet Gas Wt Lvg Econ		LB/LB Fuel	---	10.562	12.100
Losses		%			
Dry Gas			4.84	4.86	4.79
H2O in Fuel		(2)	5.15	.87	.75
H2 in Fuel			---	4.28	4.58
Moisture in Air			.07	.06	.02
Unburned Combustible			.20	.03	.03
Radiation			.17	.17	.15
Unaccounted		(3)	1.00	.50	.50
Summation of Losses			11.43	10.77	10.82
Efficiency		%	88.57	89.23	89.18
Unit Output		MKB	6691.5	6691.5	6946.6
Fuel Input		MKB	7555.0	7499.2	7789.4
Fuel Rate		MLB/HR	686.2	681.1	638.7

(1) Includes By-Pass Flow (2) Includes H2 in Fuel Loss
 (3) Includes Manufacturer's Margin of .5 %

TEST 11 : 28Aug90 : 1655-1900 : 867 MW WITH FINAL FUEL ANALYSIS

JEH-120690

rb614_0890:jeh

Appendix 6

IP7_038535

CALCULATION METHODOLOGY FOR SECONDARY AIR HEATER
GAS OUTLET CONDITIONS AND AIR/GAS FLOW DISTRIBUTION

The secondary air heater gas outlet temperature and gas analysis can not be measured directly on this unit due to the arrangement of the air heater gas outlet flues. However, the sampling locations are excellent for the primary air heater gas outlet and composite of all the air heater gas outlets, and can be measured with the accuracy equivalent to any unit. Since two out of three locations can be measured, the third location (secondary air heater gas outlet) can be calculated as accurately as the measurements at any of the other locations.

Below is the calculation methodology used for this contract.

Attachment C contains a summary of the sampling locations and the measurements that were performed at each location, as well as sketches showing the sampling grid size for each test station. With the exception of the air heater air inlets, the temperatures, O₂ and CO₂ were weight averaged based on the velocity head measurements. Input (fuel flow) was calculated based on measured output and efficiency calculated per PTC 4.1, Heat Loss Method.

For heat balance calculations, B&W enthalpy/specific heat of air and flue gas are based upon NASA-272.

Referring to the attached schematic of the actual arrangement of the air heaters, Figure 1, calculate the following (the average of two air heaters is depicted below for simplicity, however, there is sufficient test data that calculations may be performed on an individual air heater basis):

1. Total gas flow to air heaters, Wg14 - Calculate per PTC 4.3/4.1 based on O₂ & CO₂ leaving the economizer, and fuel input.
- 2A. APCO method for calculating gas flow to individual air heaters - Gas flow is calculated by proportioning the total calculated gas flow to the air heaters (Item 1 above) based on the measured gas flow entering the air heaters.

Wgml4 = Wgml4A + Wgml4B - Total measured gas flow to air heaters.

Wg14 = Total calculated gas flow to air heaters.

Wg14A = Wgml4A * Wg14 / Wgml4 - Gas flow to secondary AH's.

Wg14B = Wgml4B * Wg14 / Wgml4 - Gas flow to primary AH's

- 2B. B&W method for calculating gas flow to individual air heaters - Calculate gas flow through the primary air heater by heat balance based on measured primary air flow to the pulverizers. Secondary air heater gas flow is the difference between total gas flow to the air heaters and gas flow entering the primary air heater.

$$Wg14B = Wam11 * (Ham11 - Ha8B) / (Hg14B - Hg15B)$$
$$Wg14A = Wg14 - Wg14B$$

Where:

Wam11 = Measured air flow to pulverizers (plant computer).
Ham11 = Average enthalpy of air entering pulverizers, Btu/lbm.
Hg = Enthalpy of flue gas, Btu/lbm. See below.

3. Calculate the primary air heater leakage, Wah115B, conventionally per PTC 4.3.
4. Calculate the gas temperature leaving the primary air heater excluding leakage, Tg15BNL, conventionally per PTC 4.3.

Figure 2 is an equivalent schematic of the air heaters for purposes of explaining the calculation of total air heater leakage and secondary air heater gas outlet temperature excluding leakage. Individual secondary air heater performance may be calculated using measured data from the right or left side of the boiler.

5. Calculate total air heater leakage, Wah115, per PTC 4.3 conventionally based on O2 and CO2 measurements at [14] and [15].
6. Calculate the secondary air heater leakage, Wah115A, by difference.

$$Wah115A = Wah115 - Wah115B$$

7. Calculate the gas temperature leaving the heaters excluding leakage, Tg15NL, per PTC 4.3 conventionally based on the average air temperature of the infiltrating air, Tah115.

$$Tah115 = (Tah115A * Wah115A + Tah115B * Wah115B) / Wah115$$

8. Calculate the gas temperature leaving the secondary air heater(s) excluding leakage, Tg15ANL, by heat balance in accordance with the following equations:

$$Tg15ANL f(Hg15ANL) \text{ where } Hg15ANL = \text{Enthalpy of flue gas @ Tg15ANL}$$

$$Hg15ANL = (Wg15NL * Hg15NL - Wg15BNL * Hg15BNL) / Wg15ANL$$

The enthalpy of flue gas required in the equation above is a function of moisture in the flue gas as well as the dry flue gas composition. Moisture in flue gas is a function of excess air at the location in question, and must be calculated for each location as described below.

9. Calculate moisture in flue gas leaving the economizer, M14, and moisture entering the primary air heater, M14B, per PTC 4.3.
10. Calculate moisture in flue gas leaving the secondary air heater by mass balance per the following equation:

$$M14A = (M14 * Wg14 - M14B * Wg14B) / Wg14A$$

11A. APCO method - Calculate air flow through individual air heaters by heat balance.

11B. B&W method - Calculate air flow through the primary air heater by heat balance. Secondary air flow is the difference between total air flow to the burners less the primary air flow. Total air flow to the burners is calculated stoichiometrically assuming 2 % setting infiltration at full load.

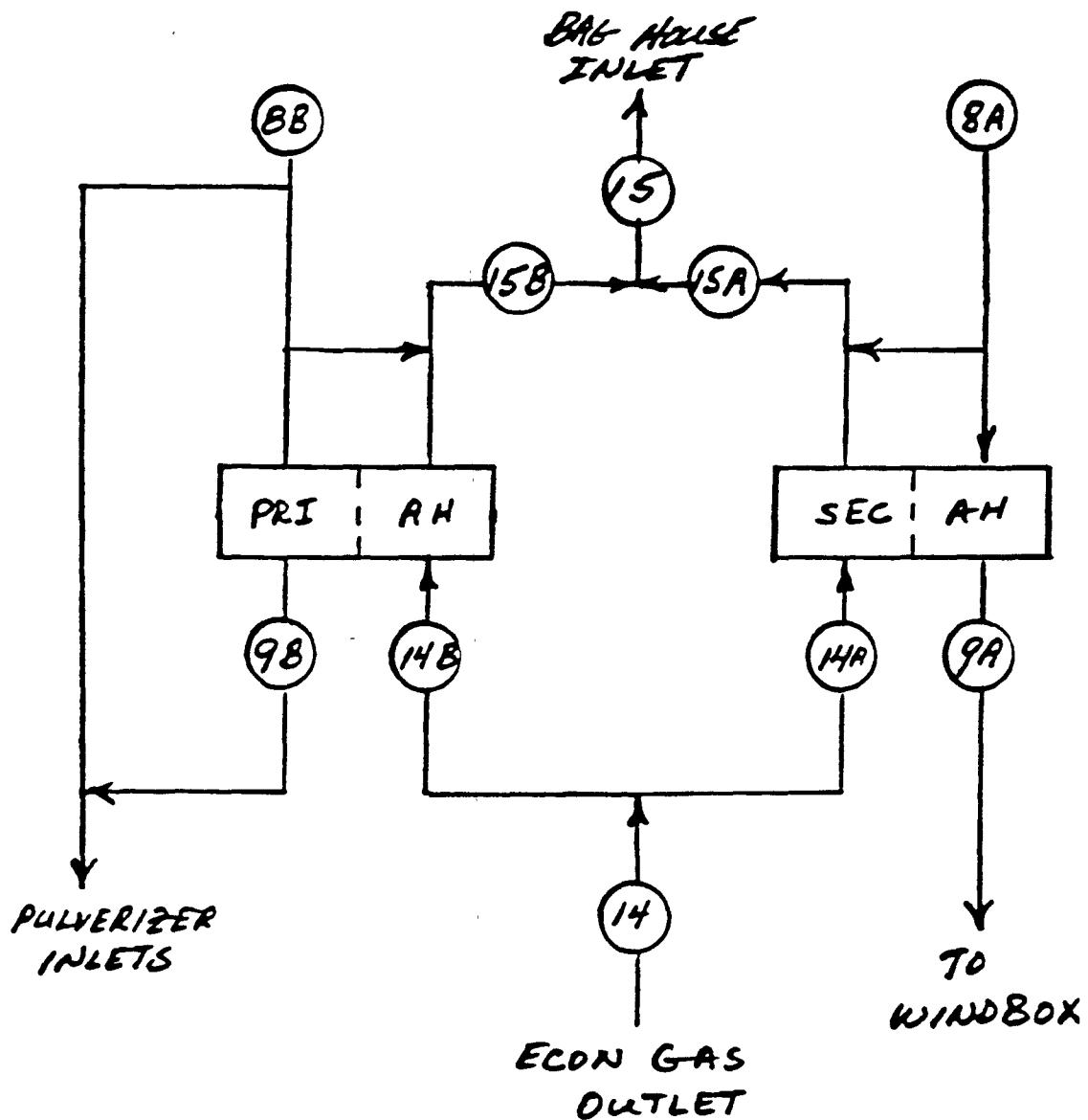


FIG. I - SCHEMATIC OF PHYSICAL ARRANGEMENT

BABCOCK & WILCOX DEPARTMENT IPP	DATE 6/8/87 CHECKED DATE JOB NO.	BY TCH BY SHEET _____ OF _____	REVISION
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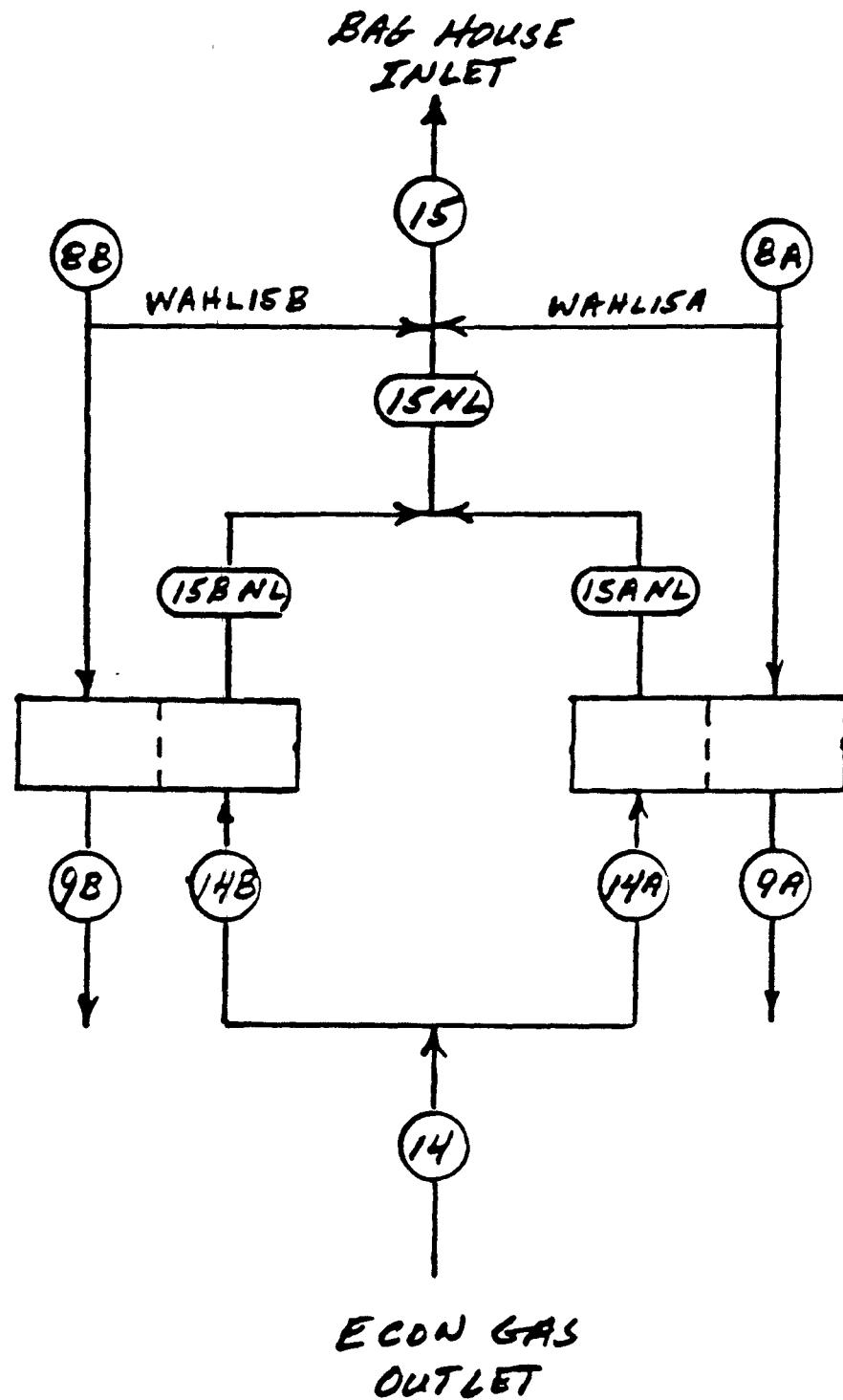


FIG. 2 - SCHEMATIC EQUIVALENT
FOR NO LEAKAGE

BABCOCK & WILCOX
DEPARTMENT

IPP

DATE 6/8/87 BY TCM

CHECKED DATE BY

JOB NO.

REVISION

SHEET _____ OF _____

CALCULATED SECONDARY AH GAS OUTLET CONDITIONS

		LVG ECON	ENT PRI	LVG PRI	ENT SEC	LVG SEC	TOTAL LVG AH'S
O2,	%	3.81*	3.59*	7.48*	3.81*	4.26	4.66*
CO2,	%	15.08	15.27	11.84	15.08	14.69	14.34
EXCESS AIR,	%	21.7	20.2	54.2	21.7	24.9	27.9
H2O IN GAS,	%	4.70	4.75	3.87	4.70	4.60	4.51
T AIR,	F		102.4*	514.0*	80.9*	667.6*	
H AIR,	BTU/LB		5.4		.2		
T AIR CALC,	F			514.5		666.5	
T GAS,	F	739.3*	723.8*	298.7*	739.3*	293.9	294.5*
H GAS,	BTU/LB			54.1		53.2	53.3
H GASC,	BTU/LB			66.8		54.5	55.7
T GAS (W/O LKG), F				347.1		298.8	303.5
WT AIR,	KLB/HR			752.9		5754.0	0.0
WT GAS,	KLB/HR	7975.0	768.4	969.3	7206.6	7382.3	8351.6
AH LKG,	KLB/HR			200.9*		175.7	376.6*

* DENOTES MEASURED VALUES.

PRI AH AIR BY-PASS FLOW = 738.5
 MOIS IN AIR, LB/LB DA = .0048
 WT AIR LVG SEC BY HT BAL = 5743.7

TEST 1 : 22Aug90 : 1050-1305 : 868 MW USING FINAL FUEL ANALYSIS

JEH-120690

rb614_0890:jeh

Appendix 7

CALCULATED SECONDARY AH GAS OUTLET CONDITIONS

		LVG ECON	ENT PRI	LVG PRI	ENT SEC	LVG SEC	TOTAL LVG AH'S
O2,	%	4.37*	3.77*	7.38*	4.37*	4.47	4.86*
CO2,	%	14.46	14.98	11.82	14.46	14.36	14.03
EXCESS AIR,	%	25.6	21.4	52.9	25.6	26.4	29.4
H2O IN GAS,	%	4.67	4.81	3.96	4.67	4.63	4.56
T AIR,	F		109.2*	508.0*	87.8*	665.2*	
H AIR,	BTU/LB		7.0		1.9		
T AIR CALC,	F			508.5		669.2	
T GAS,	F	735.0*	719.5*	297.3*	735.0*	292.6	293.2*
H GAS,	BTU/LB			53.8		52.9	53.0
H GASC,	BTU/LB			65.0		53.2	54.3
T GAS (W/O LKG), F				340.1		293.7	298.1
WT AIR,	KLB/HR			778.7		6000.0	0.0
WT GAS,	KLB/HR	8216.0	764.4	948.3	7451.6	7494.4	8442.6
AH LKG,	KLB/HR			183.9*		42.8	226.6*

* DENOTES MEASURED VALUES.

PRI AH AIR BY-PASS FLOW =	713.4
MOIS IN AIR, LB/LB DA =	.0041
WT AIR LVG SEC BY HT BAL =	6042.9

TEST 2 : 22Aug90 : 1500-1705 : 866 MW WITH FINAL FUEL ANALYSIS

JEH-120690

rb614_0890:jeh

Appendix 7

CALCULATED SECONDARY AH GAS OUTLET CONDITIONS

		LVG ECON	ENT PRI	LVG PRI	ENT SEC	LVG SEC	TOTAL LVG AH'S
O2,	%	3.81*	3.80*	7.51*	3.81*	4.60	4.99*
CO2,	%	14.96	14.97	11.71	14.96	14.26	13.92
EXCESS AIR,	%	21.6	21.5	54.4	21.6	27.4	30.4
H2O IN GAS,	%	4.87	4.87	4.00	4.87	4.69	4.60
T AIR,	F		93.6*	511.7*	69.2*	645.3*	
H AIR,	BTU/LB		3.3		-2.6		
T AIR CALC,	F			512.2		648.6	
T GAS,	F	725.4*	713.1*	297.9*	725.4*	265.4	269.6*
H GAS,	BTU/LB			53.9		46.0	47.1
H GASC,	BTU/LB			66.6		48.2	50.2
T GAS (W/O LKG), F				346.2		273.6	281.7
WT AIR,	KLB/HR			752.2		5264.0	0.0
WT GAS,	KLB/HR	7163.0	800.5	1001.0	6362.5	6643.2	7644.2
AH LKG,	KLB/HR			200.5*		280.7	481.2*

* DENOTES MEASURED VALUES.

PRI AH AIR BY-PASS FLOW =	485.4
MOIS IN AIR, LB/LB DA =	.0051
WT AIR LVG SEC BY HT BAL =	5295.2

TEST 3 : 22Aug90 : 0555-0720 : 789 MW USING FINAL FUEL ANALYSIS

JEH-120690

rb614_0890:jeh

Appendix 7

CALCULATED SECONDARY AH GAS OUTLET CONDITIONS

		LVG ECON	ENT PRI	LVG PRI	ENT SEC	LVG SEC	TOTAL LVG AH'S
O2,	%	3.85*	3.50*	7.23*	3.85*	4.32	4.72*
CO2,	%	14.89	15.19	11.94	14.89	14.47	14.12
EXCESS AIR,	%	21.9	19.5	51.2	21.9	25.3	28.3
H2O IN GAS,	%	4.91	4.99	4.10	4.91	4.79	4.70
T AIR,	F		105.7*	503.7*	84.1*	658.3*	
H AIR,	BTU/LB		6.2		1.0		
T AIR CALC,	F			504.2		665.3	
T GAS,	F	731.8*	714.7*	297.8*	731.8*	280.9	283.0*
H GAS,	BTU/LB			53.9		50.0	50.5
H GASC,	BTU/LB			65.6		51.3	52.8
T GAS (W/O LKG), F				342.2		285.7	291.7
WT AIR,	KLB/HR			859.2		5955.0	0.0
WT GAS,	KLB/HR	8165.0	856.4	1066.4	7308.6	7497.3	8562.6
AH LKG,	KLB/HR			210.0*		188.6	398.6*

* DENOTES MEASURED VALUES.

PRI AH AIR BY-PASS FLOW = 609.8
 MOIS IN AIR, LB/LB DA = .0047
 WT AIR LVG SEC BY HT BAL = 6029.8

TEST 2R : 23Aug90 : 1130-1340 : 873 MW WITH FINAL FUEL ANALYSIS

JEH-120690

rb614_0890:jeh

Appendix 7

CALCULATED SECONDARY AH GAS OUTLET CONDITIONS

		LVG ECON	ENT PRI	LVG PRI	ENT SEC	LVG SEC	TOTAL LVG AH'S
O2,	%	6.91*	6.70*	10.58*	6.91*	7.74	8.13*
CO2,	%	12.39	12.57	9.13	12.39	11.65	11.31
EXCESS AIR,	%	48.1	46.0	99.9	48.1	57.3	62.0
H2O IN GAS,	%	3.89	3.94	3.04	3.89	3.70	3.62
T AIR,	F		107.1*	501.7*	77.6*	597.5*	
H AIR,	BTU/LB		6.5		-.6		
T AIR CALC,	F			502.5		607.2	
T GAS,	F	666.9*	653.1*	293.0*	666.9*	240.9	247.6*
H GAS,	BTU/LB			52.3		39.6	41.2
H GASC,	BTU/LB			68.1		41.9	44.6
T GAS (W/O LKG), F				354.1		250.0	260.9
WT AIR,	KLB/HR			395.7		3510.0	0.0
WT GAS,	KLB/HR	4749.0	493.9	664.7	4255.1	4502.7	5167.4
AH LKG,	KLB/HR			170.9*		247.6	418.4*

* DENOTES MEASURED VALUES.

PRI AH AIR BY-PASS FLOW = 420.8
 MOIS IN AIR, LB/LB DA = .0046
 WT AIR LVG SEC BY HT BAL = 3577.5

TEST 5 : 24Aug90 : 0040-0250 : 442 MW WITH FINAL FUEL ANALYSIS

JEH-120690

CALCULATED SECONDARY AH GAS OUTLET CONDITIONS

	LVG ECON	ENT PRI	LVG PRI	ENT SEC	LVG SEC	TOTAL LVG AH'S
O2,	\$ 5.40*	5.18*	9.03*	5.40*	6.25	6.63*
CO2,	\$ 13.73	13.93	10.52	13.73	12.99	12.64
EXCESS AIR,	\$ 33.9	32.0	74.1	33.9	41.5	45.3
H2O IN GAS,	\$ 4.18	4.23	3.36	4.18	3.98	3.90
T AIR, F		99.9*	506.2*	73.9*	613.6*	
H AIR, BTU/LB		4.8		-1.5		
T AIR CALC, F			506.9		624.6	
T GAS, F	687.4*	675.5*	295.3*	687.4*	253.0	258.5*
H GAS, BTU/LB			53.0		42.7	44.0
H GASC, BTU/LB			67.2		45.0	47.4
T GAS (W/O LKG), F			350.2		262.0	271.6
WT AIR, KLB/HR			520.0		4100.0	0.0
WT GAS, KLB/HR	5654.0	611.3	792.3	5042.7	5306.9	6099.2
AH LKG, KLB/HR			181.0*		264.2	445.2*

* DENOTES MEASURED VALUES.

PRI AH AIR BY-PASS FLOW = 520.5
 MOIS IN AIR, LB/LB DA = .0045
 WT AIR LVG SEC BY HT BAL = 4185.6

TEST 6 : 24Aug90 : 0440-0650 : 586 MW WITH FINAL FUEL ANALYSIS

JEH-120690

rb614_0890:jeh

Appendix 7

CALCULATED SECONDARY AH GAS OUTLET CONDITIONS

		LVG ECON	ENT PRI	LVG PRI	ENT SEC	LVG SEC	TOTAL LVG AH'S
O2,	*	3.19*	3.22*	7.63*	3.19*	4.20	4.63*
CO2,	*	15.78	15.76	11.83	15.78	14.88	14.50
EXCESS AIR,	*	17.6	17.7	56.0	17.6	24.5	27.7
H2O IN GAS,	*	4.60	4.60	3.64	4.60	4.39	4.30
T AIR,	F		104.4*	510.3*	82.1*	662.9*	
H AIR,	BTU/LB		5.9		.5		
T AIR CALC,	F			510.9		724.9	
T GAS,	F	733.6*	718.4*	297.2*	733.6*	260.2	264.8*
H GAS,	BTU/LB			53.6		44.6	45.7
H GASC,	BTU/LB			67.9		47.0	49.2
T GAS (W/O LKG), F				351.9		269.4	278.0
WT AIR,	KLB/HR			751.3		5124.0	0.0
WT GAS,	KLB/HR	7507.0	778.3	1011.7	6728.7	7094.2	8106.0
AH LKG,	KLB/HR			233.4*		365.6	599.0*

* DENOTES MEASURED VALUES.

PRI AH AIR BY-PASS FLOW = 919.6
 MOIS IN AIR, LB/LB DA = .0046
 WT AIR LVG SEC BY HT BAL = 5689.7

TEST 7 : 27Aug90 : 0910-1115 : 873 MW WITH FINAL FUEL ANALYSIS

JEH-120690

rb614_0890:jeh

Appendix 7

CALCULATED SECONDARY AH GAS OUTLET CONDITIONS

		LVG ECON	ENT PRI	LVG PRI	ENT SEC	LVG SEC	TOTAL LVG AH'S
O2,	%	3.22*	3.15*	6.93*	3.22*	3.84	4.21*
CO2,	%	15.51	15.57	12.25	15.51	14.96	14.64
EXCESS AIR,	%	17.7	17.2	48.2	17.7	21.9	24.5
H2O IN GAS,	%	4.83	4.84	3.98	4.83	4.69	4.61
T AIR,	F		111.9*	507.2*	89.8*	672.7*	
H AIR,	BTU/LB		7.7		2.4		
T AIR CALC,	F			507.7		703.8	
T GAS,	F	742.1*	723.7*	296.1*	742.1*	292.5	292.9*
H GAS,	BTU/LB			53.5		52.9	52.9
H GASC,	BTU/LB			64.6		54.5	55.5
T GAS (W/O LKG), F				338.5		298.8	302.7
WT AIR,	KLB/HR			783.6		5372.0	0.0
WT GAS,	KLB/HR	7766.0	750.9	934.1	7015.1	7246.5	8180.6
AH LKG,	KLB/HR			183.2*		231.4	414.6*

* DENOTES MEASURED VALUES.

PRI AH AIR BY-PASS FLOW =	888.0
MOIS IN AIR, LB/LB DA =	.0045
WT AIR LVG SEC BY HT BAL =	5668.1

TEST 8 : 27Aug90 : 1330-1530 : 868 MW WITH FINAL FUEL ANALYSIS

JEH-120690

rb614_0890:jeh

Appendix 7

CALCULATED SECONDARY AH GAS OUTLET CONDITIONS

		LVG ECON	ENT PRI	LVG PRI	ENT SEC	LVG SEC	TOTAL LVG AH'S
O2,	%	3.71*	3.82*	7.56*	3.71*	4.24	4.64*
CO2,	%	15.16	15.06	11.76	15.16	14.69	14.34
EXCESS AIR,	%	21.0	21.7	55.0	21.0	24.7	27.7
H2O IN GAS,	%	4.73	4.71	3.86	4.73	4.62	4.52
T AIR,	F		103.1*	507.6*	80.7*	656.8*	
H AIR,	BTU/LB		5.6		.2		
T AIR CALC,	F			508.0		659.7	
T GAS,	F	730.1*	716.1*	296.8*	730.1*	282.1	283.9*
H GAS,	BTU/LB			53.6		50.2	50.6
H GASC,	BTU/LB			65.7		51.7	53.1
T GAS (W/O LKG), F				343.2		287.6	293.3
WT AIR,	KLB/HR			796.6		5738.0	0.0
WT GAS,	KLB/HR	7889.0	808.0	1012.6	7081.0	7283.4	8296.0
AH LKG,	KLB/HR			204.6*		202.4	407.0*

* DENOTES MEASURED VALUES.

PRI AH AIR BY-PASS FLOW =	632.2
MOIS IN AIR, LB/LB DA =	.0050
WT AIR LVG SEC BY HT BAL =	5767.5

TEST 9 : 28Aug90 : 0930-1130 : 870 MW WITH FINAL FUEL ANALYSIS

JEH-120690

CALCULATED SECONDARY AH GAS OUTLET CONDITIONS

		LVG ECON	ENT PRI	LVG PRI	ENT SEC	LVG SEC	TOTAL LVG AH'S
O2,	%	3.10*	3.24*	7.03*	3.10*	3.60	4.01*
CO2,	%	15.49	15.37	12.08	15.49	15.06	14.71
EXCESS AIR,	%	16.9	17.8	49.1	16.9	20.1	23.0
H2O IN GAS,	%	4.96	4.93	4.03	4.96	4.85	4.75
T AIR,	F		113.6*	507.1*	91.9*	670.2*	
H AIR,	BTU/LB		8.1		2.9		
T AIR CALC,	F		/	507.6		679.2	
T GAS,	F	735.5*	721.2*	299.0*	735.5*	302.2	301.9*
H GAS,	BTU/LB			54.2		55.4	55.3
H GASC,	BTU/LB			65.5		56.8	57.7
T GAS (W/O LKG), F				341.8		307.3	310.9
WT AIR,	KLB/HR			822.9		5411.0	0.0
WT GAS,	KLB/HR	7771.0	795.7	991.0	6975.3	7153.3	8144.2
AH LKG,	KLB/HR			195.3*		178.0	373.2*

* DENOTES MEASURED VALUES.

PRI AH AIR BY-PASS FLOW = 810.6
 MOIS IN AIR, LB/LB DA = .0035
 WT AIR LVG SEC BY HT BAL = 5498.0

TEST 10 : 28Aug90 : 1330-1540 : 867 MW WITH FINAL FUEL ANALYSIS

JEH-120690

rb614_0890:jeh

Appendix 7

CALCULATED SECONDARY AH GAS OUTLET CONDITIONS

		LVG ECON	ENT PRI	LVG PRI	ENT SEC	LVG SEC	TOTAL LVG AH'S
O2,	%	3.21*	3.21*	7.05*	3.21*	3.64	4.04*
CO2,	%	15.34	15.34	12.01	15.34	14.97	14.62
EXCESS AIR,	%	17.6	17.6	49.2	17.6	20.4	23.2
H2O IN GAS,	%	5.01	5.00	4.06	5.01	4.90	4.81
T AIR,	F		117.8*	506.9*	95.4*	665.7*	
H AIR,	BTU/LB		9.1		3.7		
T AIR CALC,	F			507.4		670.5	
T GAS,	F	737.6*	725.4*	297.7*	737.6*	303.8	303.1*
H GAS,	BTU/LB			53.9		55.8	55.6
H GAS C,	BTU/LB			65.0		57.0	57.8
T GAS (W/O LKG), F				339.8		308.2	311.3
WT AIR,	KLB/HR			795.2		5556.0	0.0
WT GAS,	KLB/HR	7728.0	747.2	932.9	6980.8	7137.2	8070.1
AH LKG,	KLB/HR			185.8*		156.3	342.1*

* DENOTES MEASURED VALUES.

PRI AH AIR BY-PASS FLOW =	654.9
MOIS IN AIR, LB/LB DA =	.0028
WT AIR LVG SEC BY HT BAL =	5604.4

TEST 11 : 28Aug90 : 1655-1900 : 867 MW WITH FINAL FUEL ANALYSIS

JEH-120690

IP7_038552

TEST 1 : 22 Aug 90 : 1050-1305 : 868 MW INDIVIDUAL AH LEAKAGE CALCS

		W BH ¹	E BH ¹	W PAH	E PAH	W SAH	E SAH
O2 ENT AH,	%	3.9	3.7	3.9	3.3		
O2 LVG AH,	%	4.9	4.4	8.0	7.0		
LKG,	%	5.5	3.9	28.4	23.6	1.9	.6
LKG,	KLB/HR	218	154	153	131	65	22
WG ENT,	KLB/HR	3953	3970	540	558	3413	3413
TG LVG W/ LKG, F		294	295	289	309	295	292
TG LVG W/O LKG, F		0	0	339	355	296	292
AH EFFICIENCY, %		0.0	0.0	61.8	59.5	67.2	68.0

TEST 2 : 22 Aug 90 : 1500-1705 : 866 MW INDIVIDUAL AH LEAKAGE CALCS

		W BH ¹	E BH ¹	W PAH	E PAH	W SAH	E SAH
O2 ENT AH,	%	4.8	3.9	4.0	3.5		
O2 LVG AH,	%	5.1	4.6	7.8	6.9		
LKG,	%	1.8	3.7	25.9	21.9	-1.9	.8
LKG,	KLB/HR	71	149	138	122	-67	27
WG ENT,	KLB/HR	4029	4053	534	558	3495	3495
TG LVG W/ LKG, F		296	290	287	307	297	287
TG LVG W/O LKG, F		0	0	331	348	297	288
AH EFFICIENCY, %		0.0	0.0	63.6	60.8	67.8	69.1

TEST 3 : 23 Aug 90 : 0555-0720 : 789 MW INDIVIDUAL AH LEAKAGE CALCS

		W BH ¹	E BH ¹	W PAH	E PAH	W SAH	E SAH
O2 ENT AH,	%	3.9	3.7	3.9	3.7		
O2 LVG AH,	%	5.2	4.8	8.0	7.0		
LKG,	%	7.4	6.0	28.5	21.4	2.8	2.5
LKG,	KLB/HR	258	211	177	138	80	73
WG ENT,	KLB/HR	3503	3526	622	645	2881	2881
TG LVG W/ LKG, F		270	269	288	308	266	259
TG LVG W/O LKG, F		0	0	340	352	267	260
AH EFFICIENCY, %		0.0	0.0	60.3	58.2	70.0	70.8

¹Under the columns labeled as the W BH and E BH, the O2 ENT AH and O2 LVG AH actually represent the O2 leaving the economizer and the O2 entering the baghouse. These are the O2's used to determine the composite airheater leakage and the unit efficiency.

TEST 2R : 23 Aug 90 : 1130-1340 : 789 MW INDIVIDUAL AH LEAKAGE CALCS

		W BH ¹	E BH ¹	W PAH	E PAH	W SAH	E SAH
O2 ENT AH,	%	4.7	3.0	4.6	2.4		
O2 LVG AH,	%	5.5	4.0	8.2	6.3		
LKG,	%	4.6	5.0	25.2	23.6	.7	1.5
LKG,	KLB/HR	183	200	158	151	25	49
WG ENT,	KLB/HR	3953	3968	628	642	3326	3326
TG LVG W/ LKG, F		282	284	287	309	281	278
TG LVG W/O LKG, F		0	0	331	354	282	278
AH EFFICIENCY, %		0.0	0.0	62.7	59.6	69.3	70.2

TEST 5 : 24 Aug 90 : 0040-0250 : 442 MW INDIVIDUAL AH LEAKAGE CALCS

		W BH ¹	E BH ¹	W PAH	E PAH	W SAH	E SAH
O2 ENT AH,	%	6.9	7.0	6.5	6.9		
O2 LVG AH,	%	8.3	8.0	10.6	10.6		
LKG,	%	10.4	7.1	35.3	33.2	6.2	2.5
LKG,	KLB/HR	250	170	124	118	127	52
WG ENT,	KLB/HR	2397	2403	351	356	2047	2047
TG LVG W/ LKG, F		247	248	288	298	238	237
TG LVG W/O LKG, F		0	0	349	359	240	238
AH EFFICIENCY, %		0.0	0.0	55.5	54.1	72.5	72.7

TEST 6 : 24 Aug 90 : 0440-0650 : 586 MW INDIVIDUAL AH LEAKAGE CALCS

		W BH ¹	E BH ¹	W PAH	E PAH	W SAH	E SAH
O2 ENT AH,	%	5.7	5.1	5.4	5.0		
O2 LVG AH,	%	7.0	6.3	9.3	8.7		
LKG,	%	8.4	7.3	30.9	27.8	4.3	3.4
LKG,	KLB/HR	236	206	133	125	103	81
WG ENT,	KLB/HR	2820	2837	431	449	2389	2389
TG LVG W/ LKG, F		258	259	288	303	251	249
TG LVG W/O LKG, F		0	0	343	357	253	250
AH EFFICIENCY, %		0.0	0.0	57.8	55.4	70.8	71.2

¹Under the columns labeled as the W BH and E BH, the O2 ENT AH and O2 LVG AH actually represent the O2 leaving the economizer and the O2 entering the baghouse. These are the O2's used to determine the composite airheater leakage and the unit efficiency.

TEST 7 : 27 Aug 90 : 0910-1115 : 873 MW INDIVIDUAL AH LEAKAGE CALCS

		W BH ¹	E BH ¹	W PAH	E PAH	W SAH	E SAH
O2 ENT AH,	%	3.6	2.8	3.7	2.7		
O2 LVG AH,	%	4.9	4.3	8.2	7.0		
LKG,	%	7.6	8.2	31.9	27.6	3.4	4.7
LKG,	KLB/HR	287	310	179	160	108	150
WG ENT,	KLB/HR	3775	3793	562	580	3213	3213
TG LVG W/ LKG, F		269	260	288	307	265	250
TG LVG W/O LKG, F		0	0	343	360	267	252
AH EFFICIENCY, %		0.0	0.0	61.0	58.5	71.6	73.9

TEST 8 : 27 Aug 90 : 1330-1530 : 868 MW INDIVIDUAL AH LEAKAGE CALCS

		W BH ¹	E BH ¹	W PAH	E PAH	W SAH	E SAH
O2 ENT AH,	%	3.8	2.7	3.7	2.6		
O2 LVG AH,	%	4.5	3.9	7.7	6.2		
LKG,	%	4.1	6.4	27.0	21.6	.2	3.8
LKG,	KLB/HR	158	246	150	121	8	125
WG ENT,	KLB/HR	3833	3837	556	560	3277	3277
TG LVG W/ LKG, F		296	289	286	306	299	286
TG LVG W/O LKG, F		0	0	331	346	299	288
AH EFFICIENCY, %		0.0	0.0	63.9	62.1	67.9	69.7

TEST 9 : 28 Aug 90 : 0930-1130 : 870 MW INDIVIDUAL AH LEAKAGE CALCS

		W BH ¹	E BH ¹	W PAH	E PAH	W SAH	E SAH
O2 ENT AH,	%	4.1	3.3	4.0	3.6		
O2 LVG AH,	%	4.9	4.4	8.1	7.0		
LKG,	%	4.5	5.7	28.5	21.9	.2	2.7
LKG,	KLB/HR	177	221	170	133	7	88
WG ENT,	KLB/HR	3893	3903	597	607	3296	3296
TG LVG W/ LKG, F		288	280	287	307	288	275
TG LVG W/O LKG, F		0	0	337	349	288	276
AH EFFICIENCY, %		0.0	0.0	61.7	60.0	68.0	70.1

¹Under the columns labeled as the W BH and E BH, the O2 ENT AH and O2 LVG AH actually represent the O2 leaving the economizer and the O2 entering the baghouse. These are the O2's used to determine the composite airheater leakage and the unit efficiency.

TEST 10 : 28 Aug 90 : 1330-1540 : 867 MW INDIVIDUAL AH LEAKAGE CALCS

		W BH ¹	E BH ¹	W PAH	E PAH	W SAH	E SAH
O2 ENT AH,	%	3.2	3.0	3.2	3.3		
O2 LVG AH,	%	4.0	4.0	7.4	6.6		
LKG,	%	4.2	5.3	27.7	21.2	.3	2.6
LKG,	KLB/HR	158	202	149	117	9	86
WG ENT,	KLB/HR	3769	3782	538	550	3231	3231
TG LVG W/ LKG, F		304	299	289	309	308	297
TG LVG W/O LKG, F		0	0	335	348	308	299
AH EFFICIENCY,	%	0.0	0.0	63.4	61.5	66.4	67.9

TEST 11 : 28 Aug 90 : 1655-1900 : 867 MW INDIVIDUAL AH LEAKAGE CALCS

		W BH ¹	E BH ¹	W PAH	E PAH	W SAH	E SAH
O2 ENT AH,	%	3.7	2.8	3.6	2.8		
O2 LVG AH,	%	4.4	3.7	7.6	6.5		
LKG,	%	3.9	4.9	27.0	22.5	0.0	1.8
LKG,	KLB/HR	147	183	146	126	1	57
WG ENT,	KLB/HR	3749	3770	540	561	3208	3208
TG LVG W/ LKG, F		306	300	288	307	310	298
TG LVG W/O LKG, F		0	0	332	348	310	299
AH EFFICIENCY,	%	0.0	0.0	64.7	62.2	66.5	68.3

¹Under the columns labeled as the W BH and E BH, the O2 ENT AH and O2 LVG AH actually represent the O2 leaving the economizer and the O2 entering the baghouse. These are the O2's used to determine the composite airheater leakage and the unit efficiency.